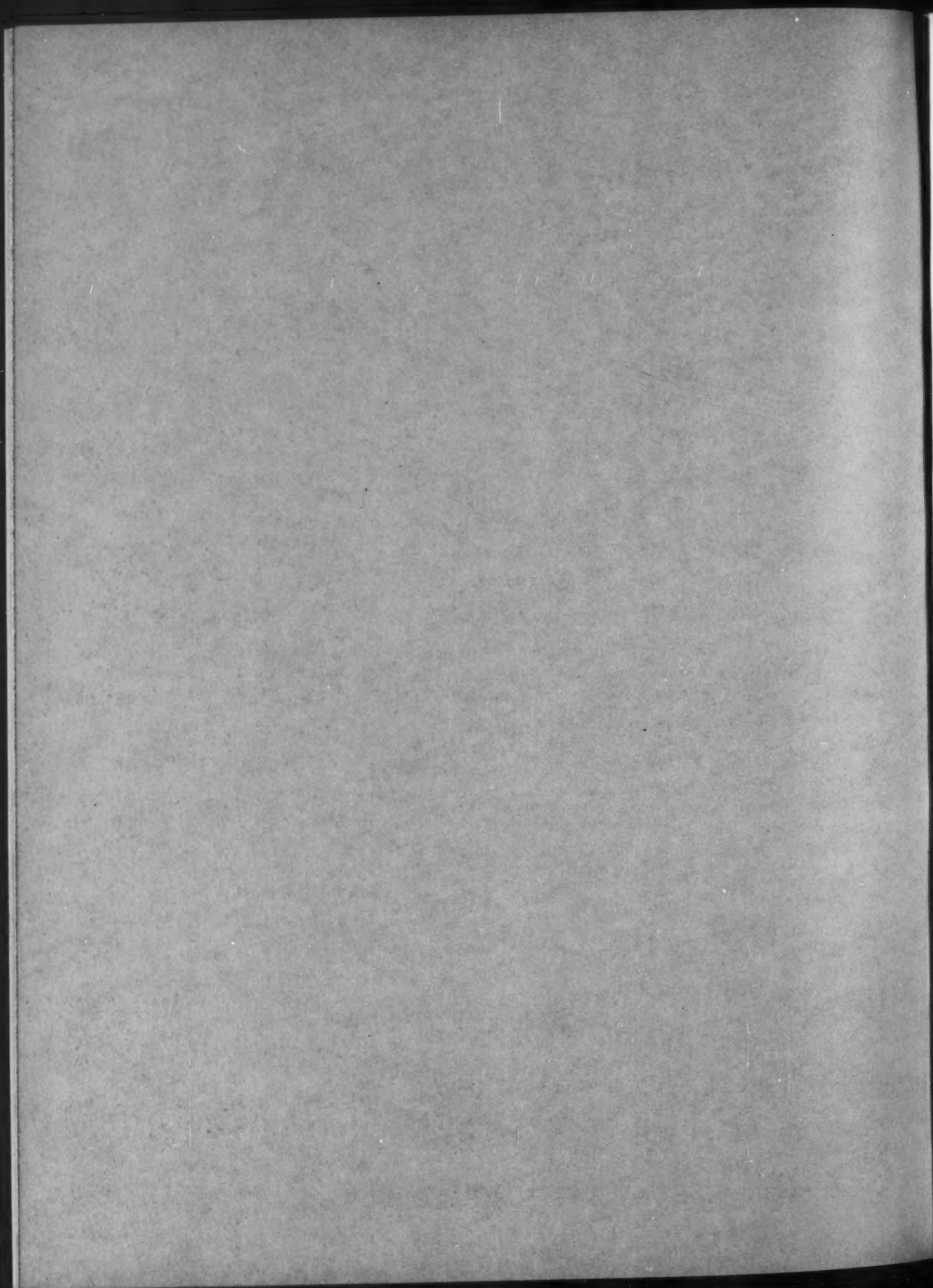


The Photo-Lithographer



The Biggest HIT

INK STRIPPING

IN
LITHOGRAPHIC
HISTORY

**The
MERCURY
EBONITE
Non-Strip ROLLER**

TAKES THE PLACE OF STEEL VIBRATORS



GREETINGS
LNA DELEGATES

RAPID ROLLER COMPANY

D. M. RAPPORT, President

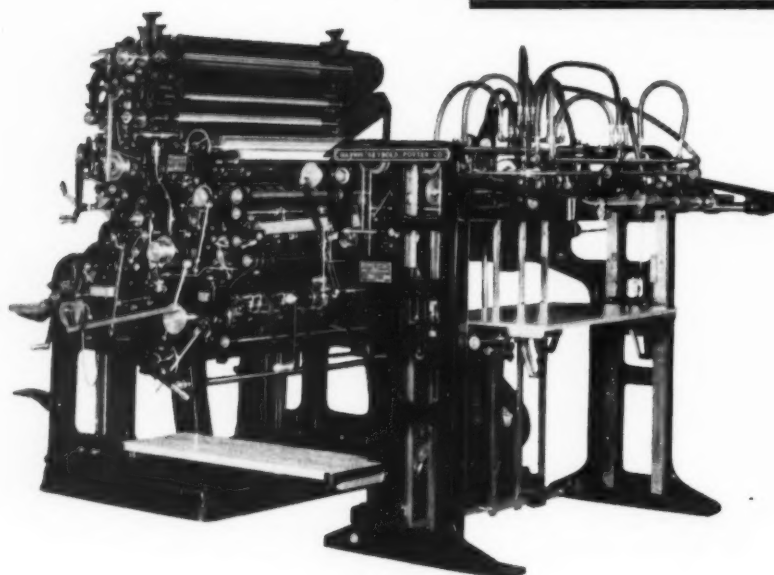
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The **EL** 22x34 Single Color

IS AN EXCEPTIONALLY POPULAR SIZE

IN THE HARRIS SMALL OFFSET

PRESS GROUP



• The quantity-quality production that is the constant outcome of the operation of this press has its foundation in more than thirty years' experience in offset press designing. Creative engineering and development effort have been combined in its building with practical first hand understanding of printing plant problems. Manufacturing procedure has been guided by capacity for maximum output of quality black and white and color work.

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OFFSET PRESSES THAT SET STANDARDS FOR A WHOLE INDUSTRY

HARRIS *Offset* **PRESSES**

THE PHOTO-LITHOGRAPHER

*Published in the Interests of Lithographers
to Increase Sales Efficiency
and Quality*

LEWIS C. GANDY
ASSOCIATE EDITOR

WALTER E. SODERSTROM
EDITOR

SAMUEL D. WOLFF
ADVERTISING MANAGER

Volume V

MAY, 1937

Number 5


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IN 1882**

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Our reputation in the manufacturing of lithographic, offset and printing inks has withstood the test of the most critical user and therefore we are able to give our customers greater value and stronger color for the money today than ever before, after all impressions per pound means more than mere price. There is no problem a problem to Siebold.

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and Safety Ink Specimen
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The Maxwell Twins will help you make the most exacting "deadlines." Their greater strength keeps your presses rolling at top production speed. Their faculty for faster feeding and folding save minutes when seconds count. Their absence of lint and fuzz and their uniformity of finish permit faster press speeds without sacrificing perfection in the finished printing.

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MAXWELL BOND Envelopes, *greatly improved*, NEW WATERMARK, now made under our own management by our affiliated subsidiary DAYTON ENVELOPE COMPANY, DAYTON, OHIO

Here is *the* Opportunity!

Tell your story to the cream of the Graphic Arts industries by reserving space in September Convention and Equipment Review Issue of THE PHOTO-LITHOGRAPHER.

Printers, lettershop owners, and photo-lithographers will gather in the following conventions in Cleveland, Ohio, October 10th to 16th:

United Typothetae of America
Direct Mail Advertising Association

Mail Advertising Service Association
National Association of Photo-Lithographers

These conventions, *all to be held in Cleveland during the same week*, should bring together the largest group of Graphic Arts employers ever assembled.

You can reach *every one* who attends *all of these conventions* with your sales message by representation in the Convention and Equipment Review issue of THE PHOTO-LITHOGRAPHER. With so many graphic arts establishments considering the photo-lithographic process, this issue of THE PHOTO-LITHOGRAPHER will be read thoroughly. Because it is lithographed 100%, it has a very real consumer acceptance in the LITHOGRAPHIC INDUSTRY.

The September issue of THE PHOTO-LITHOGRAPHER will carry editorial content which should further assure *reader interest*. Some of the papers we plan to carry in the issue are:

1. The Use of Paper, Film, Dry Plate, and Wet Plate Negatives.
2. The Size of a Lithographic Press from the Users' Viewpoint.
3. Selecting a Bond Paper for Combination Work.
4. Good Rollers Play an Important Part in Production.

5. Aluminum or Zinc Plates—What Determines the choice?

6. Ink Problems of the Lithographer.

7. Determining the Choice of Equipment—Comments on Size, Ease of Operation, Cost of Operation, Service, Life of Asset Value, Reputation of Manufacturer and Price.

Equipment offered for sale to the lithographic industry will be shown in full halftone pages in this outstanding Equipment Review issue. You can use a second color, red or blue, and a bleed; and in addition to this, you can have preferred position provided you make space reservation early. Because of the Wire-O binding used, if desired, advertisers can supply their own lithographed inserts.

Advertising Rates

Space	One Time
1 Page	\$95.00
1/2 Page	60.00
1/4 Page	35.00

Second color, red or blue, \$25.00 per page extra.

Bleed Pages 15% extra per page.
Reverse Plate: Add 10% to regular rates.

Inserts

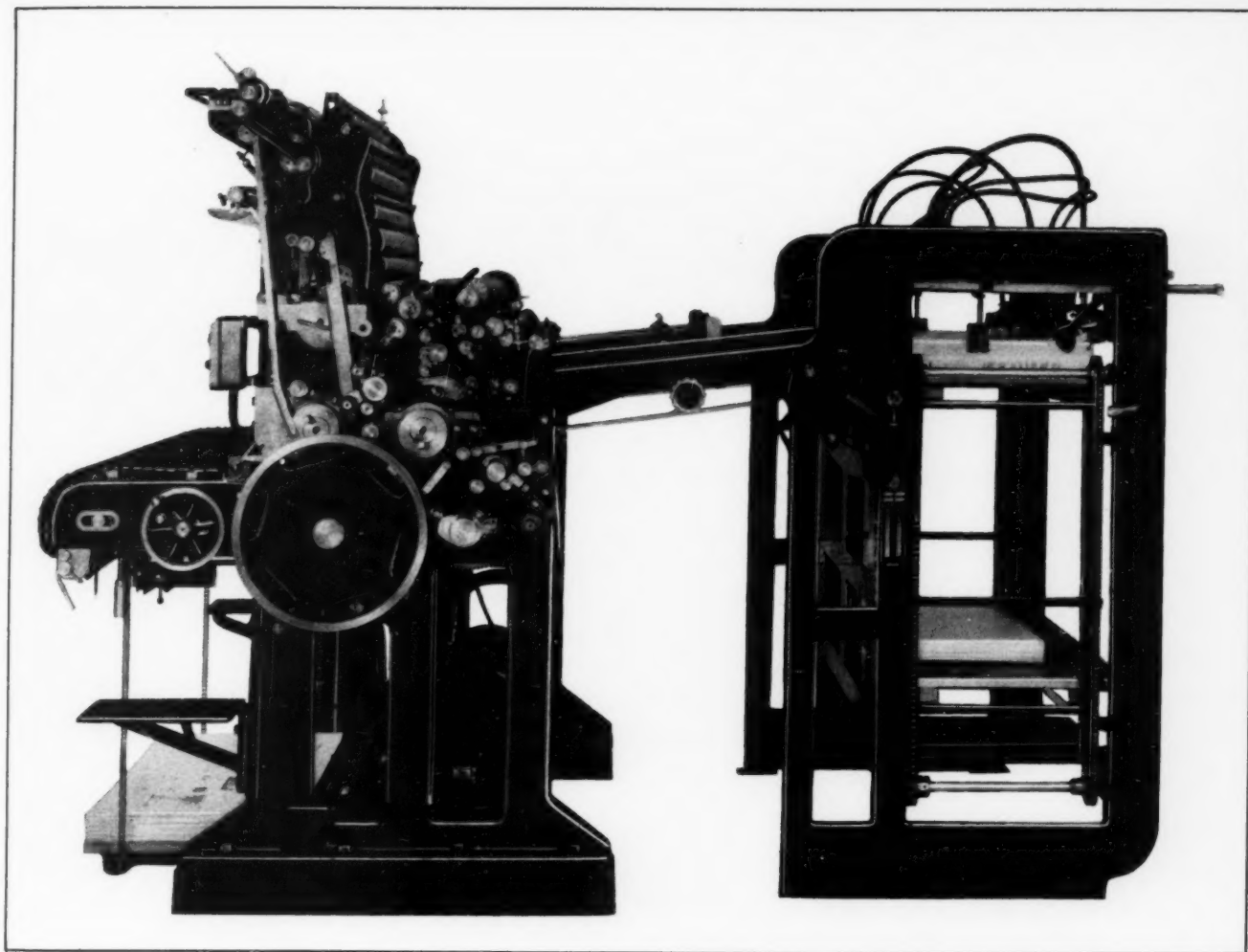
(Furnished by Advertiser)

Two Page Inserts ..	\$100.00
Four Page Inserts ..	150.00
Eight Page Inserts .	250.00

Advertising rates for the Convention Equipment issue of THE PHOTO-LITHOGRAPHER will be the same as for our regular issues. Distribution, of course, will be greatly increased. At our present low rates *you can increase your sales* by placing your story before the rich market which will be in Cleveland during the convention week.

For further information about this Advertising Buy write

THE PHOTO-LITHOGRAPHER, 1776 Broadway, New York, N. Y.



**THE
WILLARD OFFSET PRESS
22"x 30"**

*Exceptional
Accessibility*

*Extreme
Simplicity*

A Fine Press
for *Superfine*
Color Work

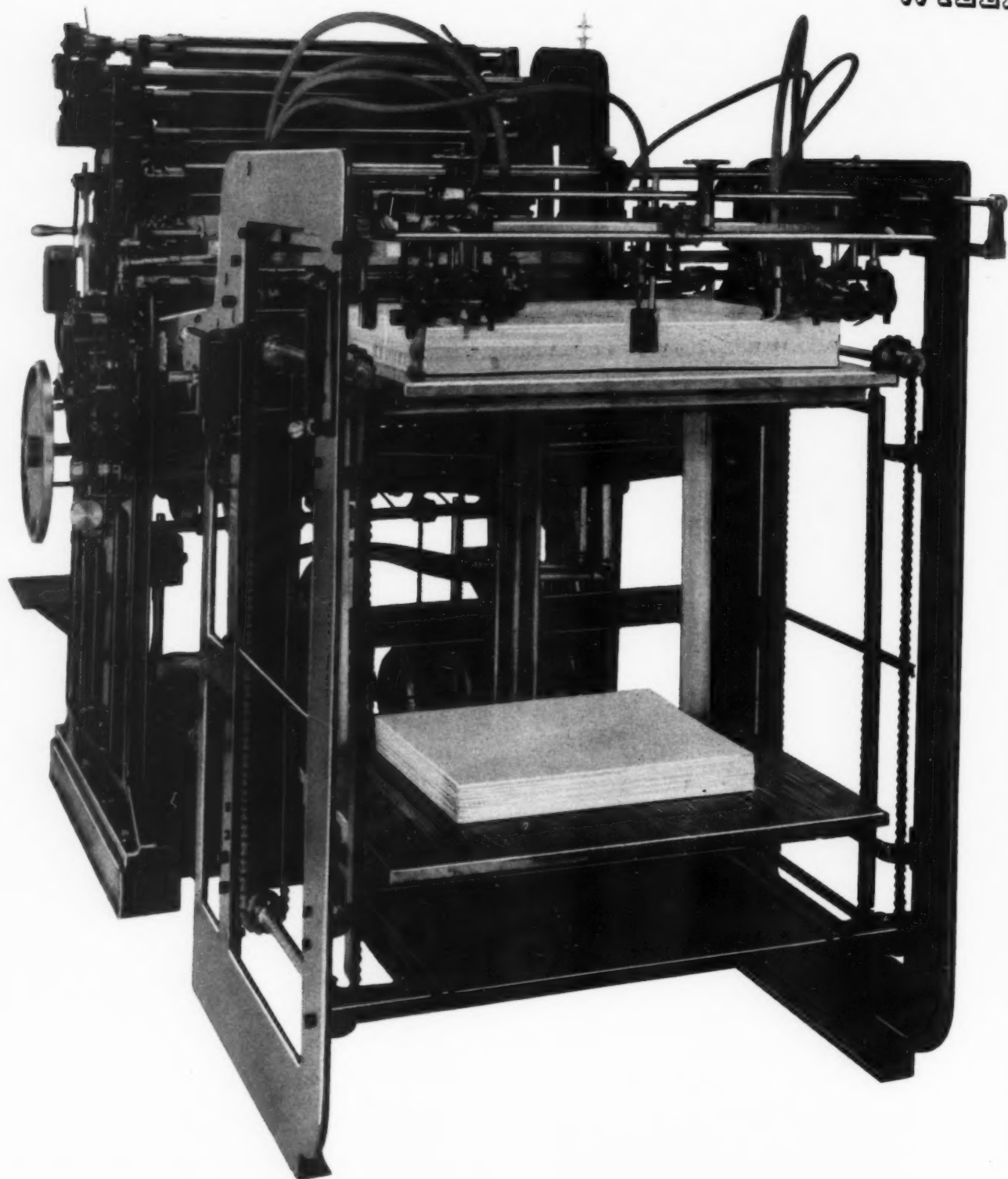
Precision Built

WILLARD MANUFACTURING CORPORATION

William Gegenheimer, President

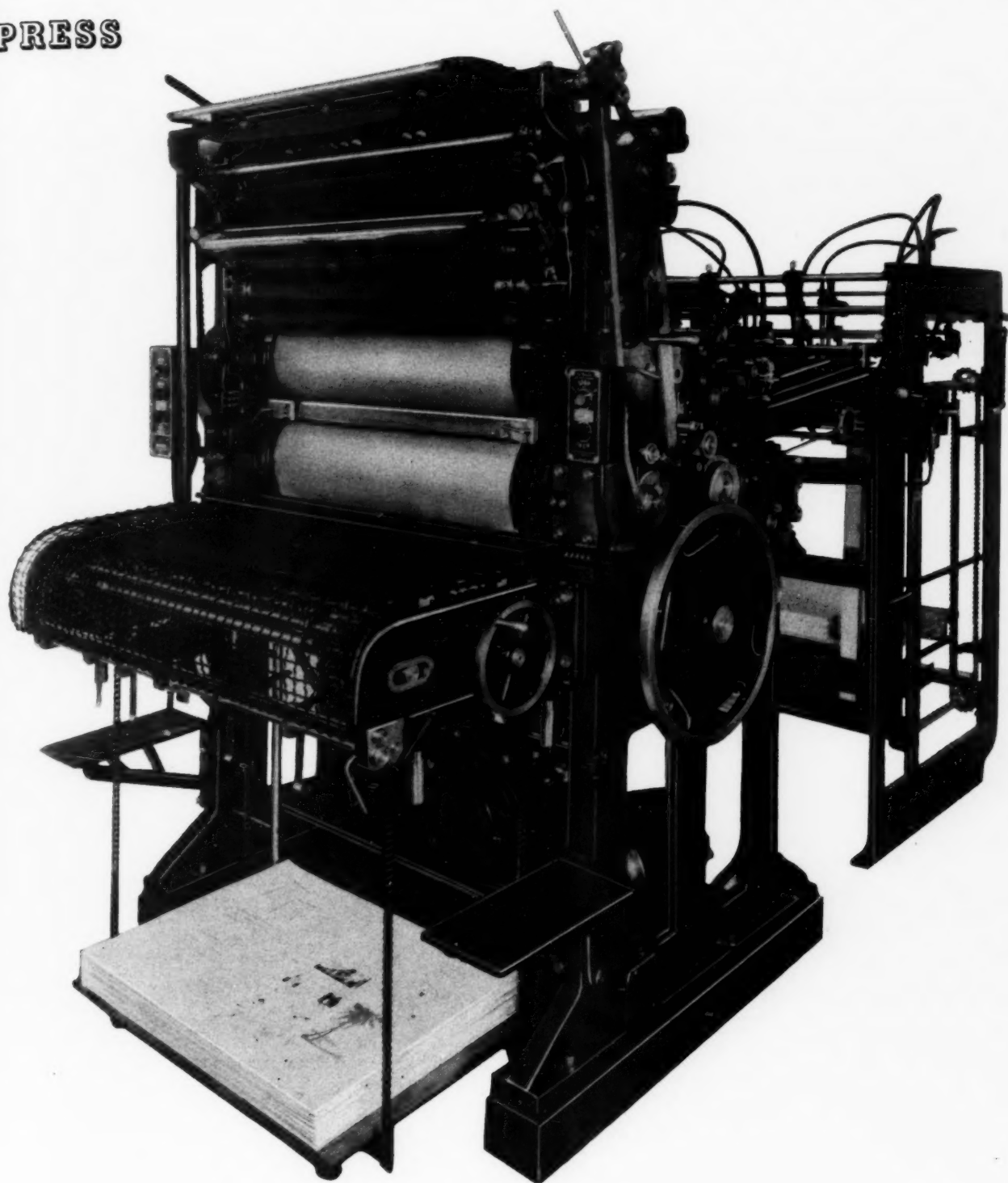
28 WEST 23rd STREET

NEW YORK



FEED VIEW—SHOWING DEXTER FEEDER

The Willard Offset Press is equipped with a specially constructed Dexter Suction Pile Reloading Feeder. This feeder combines all the latest and proved methods: two combers; two sheet detector; front end hook slow-down. Feeder is reloading type—holds 40" of stock. It is easily adjusted. Minimum size sheet, 11" x 17". The Dexter service and their guarantee coupled with ours assures complete feeder satisfaction.



DELIVERY VIEW

The automatic receding pile delivery holds 27" of stock, and has four sets of patented spring grippers. The plate cylinder is equipped with a new type of clamp (patent applied for) which permits rapid change of plate. Blanket cylinder has worm ratchet gear to tighten or loosen blanket, which can be put on or removed easily and quickly because of this feature. A built-in Baldwin Press Washer is standard equipment.

William Gegenheimer, the inventor and designer of the Willard Offset Press, has been connected with Offset Lithography since 1906. He ran the first standard make of offset press in New York City. He has numerous Offset Lithography patents and ideas to his credit. Since 1917 he conducted his own business as practicing and consulting Offset Engineer. The Willard Offset Press is the culmination of a lifetime's knowledge.

The Willard Offset Press is completely automatic. From the illustrations shown in this folder the simplicity and accessibility of this press are readily apparent. There are less parts to wear out, because needless mechanisms have been eliminated. Built to precision standards.

The inker unit throws on and off automatically; so does the cylinder pressure; and the feeder throw-off acts automatically. The impression cylinder can be easily adjusted from one-half of one thousandth to twenty-five one-thousandths of an inch for changes in stock thickness—by means of a hand wheel and calibrated scale. The side guides—movable while press is running—are adjustable from either side of press, by means of cranks outside of the press. The front guides are mounted on an adjustable shaft; and adjustments are made on the outside of the press for keeping gripper edge of sheet parallel with both guides. The ink and water motion are run from the main shaft, thereby relieving cylinders of unnecessary loads. Cylinders are all Timken Taper Bearing equipped.

SPECIFICATIONS

Sheet Size—22" x 30"

Printing Area—21 3/4" x 28"

Plate Size—24 1/2" x 30"

Blanket Size—26" x 30"

FEEDER

Dexter Air Feeder (holds 40" stock)

DELIVERY

Receding Pile Delivery (holds 27" stock)

POWER REQUIRED

3 H.P. Motor—1 H.P. for Blower

SPEED

6000—Close Register 4500

FLOOR SPACE

60" x 96" overall—78" high

WEIGHT

7000 pounds

INK DISTRIBUTION

*Inches
Diameter*

4 Composition Form Rollers 2 1/2

2 Vibrator Steel 3

1 Vibrator Steel Drum 7

1 Vibrator Steel Drum 3

4 Steel Riders 1

1 Composition Ductor 2 3/8

4 Composition Intermediates 2 3/8

1 Composition Distributor 2 3/8

Ink Roller Coverings optional.

Extra—4 Form Roller Stocks Bare

1 Ductor Roller Stock Bare

WATER DISTRIBUTION

1 Brass Fountain (Chromium
Plated) 3 1/2

1 Vibrating Intermediate (Stainless
Steel) 3

1 Ductor 2 3/8

2 Forms 2 1/2

Extra—1 Ductor—Covered

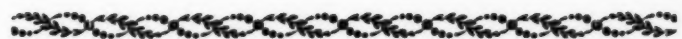
2 Forms—Covered



From "Across the Plains", published by
Willan-Erickson Co., New York

Photo by L. Palenske

FREEMAN'S CROSSING, NORTH SAN JUAN



*Famous for its Faithful
Reproductions*

Montgomery Offset

PRE-HUMIDIFIED

Utmost in Satisfaction

You will find that Montgomery Offset will give you satisfaction, regardless of the class of work for which it is used.

Its pure white color makes it especially suitable for multi-color printing; it is guaranteed for lithographing in as many as sixteen colors.

That it folds well, either with or against the grain, adapts it to broadsides and other forms of direct advertising.

Since it is free from lint, fuzz, grit, or excessive alum, and has a hard tub-sized surface, Montgomery Offset gives no trouble on the press.

Montgomery Offset is also well adapted to letterpress and water-color printing.

Cut one sheet at a time, means the elimination of torn sheets and no variation in color or finish.

It is these points which make Montgomery Offset such a satisfactory paper to use. Test it on the next fussy job you have. You will agree with us that it yields the *utmost in satisfaction*.

Sample Books Upon Request

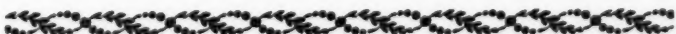
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MARQUARDT & CO., INC.

Fine Papers

153-155 SPRING STREET, NEW YORK

Telephone CANal 6-4563



PITMAN LITHO EQUIPMENT

MATCHES THE EXCELLENCE OF PITMAN LITHO PROCESSES

Pitman Products Set the Pace of Progress in the Lithographic Art

Pitman Plate Whirlers

Designed to meet the requirements of the new plate-making technique.

Plate-holder is constructed in the form of a perforated grid that permits flow of air to reach lower surface of the plate.

In the larger Whirlers, this air is heated by electrical unit beneath plate-holder, in addition to unit in cover.



Constructed in ten regular sizes up to 50" x 70".
Special sizes made to order.

All motors have enclosed gear-reduction and vertical shaft driving main shaft by single belt. All have provision for speed regulation.

Write for new Pitman Catalogue giving specifications and prices.

Pitman Elevating Type Cabinet Printing Frame

Increased convenience, cleanliness and efficiency of operation have been provided in this new Printing Frame.

The tubular beading around the blanket in lower frame is made of pure gum tubing, air-filled, that is proof against leakage of vacuum.

The cabinet not only adds to appearance, but also serves as a much-needed storage space in addition to housing motor and pump.

The release valve, at left front, is provided for either self-contained vacuum pump or for connection with already-installed exterior pump.

All three catches, at both front and back, are operated in unison by the raising and lowering of a single lever. Cam rollers are ball-bearing.

Write for new Pitman Catalogue giving specifications and prices.



HAROLD M. PITMAN COMPANY

Manufacturer of DEEP ETCH and Other Advanced Litho Processes

CHICAGO, ILL., 51st Avenue and 33rd Street

JERSEY CITY, N. J., 150 Bay Street



Tender yellow-green leaves, smiling
spring skies, and the fresh colors of
an awakening world set the "Color
Mood for the Month of May."

There may be a profitable idea
for your business in the IPI
Colorgram on the following page.



TO THE LITHOGRAPHERS OF AMERICA

*who by their own progressive technical studies have shown
a keen appreciation of fundamental scientific research*



Announces **NEW DEVELOPMENTS IN THE FORMULATION OF INKS FOR LITHOGRAPHING ON PAPER AND METAL**

The Research Laboratories of IPI in collaboration with experienced practical lithographic pressmen have for many months been working on the formulation of Offset Inks which will work better on the press and produce results superior to ordinary Offset Inks. Some of the objectives we set up are familiar to most progressive lithographers: To develop inks which would print sharper and cleaner and transfer from the blanket more completely—distribute more evenly and require no compounds or special driers—which would have superior adhesive qualities on hard surfaced papers—allow backing up with a minimum lapse of time—develop good non-rub and non-scratch properties. For the metal decorator we sought inks possessing adhesive qualities superior to ordinary lithographic inks for decorating on brass, aluminum, tin and iron—inks with shorter drying time than existing standards—improved non-scratch qualities—high gloss when baked without the use of special compounds—inks that would trap well. Considerable progress has been made in meeting these objectives. The other side of this insert was lithographed with newly formulated inks which have satisfactorily met most of the objectives for lithographing on paper. A detailed announcement will be made in the near future. In the meantime a representative of the Lithographic Products Division will be glad to discuss the application of these improved inks to your lithographic and offset problems.

THE LITHOGRAPHIC PRODUCTS DIVISION OF THE INTERNATIONAL PRINTING INK CORPORATION

ATLANTA	BALTIMORE	BATTLE CREEK	BOSTON	BUFFALO	CHICAGO	CINCINNATI	CLEVELAND	DALLAS	DENVER	DETROIT	KALAMAZOO
KANSAS CITY	LOS ANGELES	MILWAUKEE	MINNEAPOLIS	NASHVILLE	NEW ORLEANS	NEW YORK	OAKLAND				
PHILADELPHIA	PORTLAND, OREGON	RICHMOND	ROCHESTER	ST. LOUIS	ST. PAUL	SAN FRANCISCO	WASHINGTON, D. C.				

THE IPI "COLORGRAM" FOR MAY—The design on the other side is one of a series by Robert Leonard, planned to express the color mood of the month. To represent May he has used neighboring colors from reddish-yellow on the hue circuit through yellow, yellow-green, green, green-blue and blue. The soft colors and absence of sharp contrasts in Spring are effectively suggested in this color selection. Inks of new formulation were used on this insert.



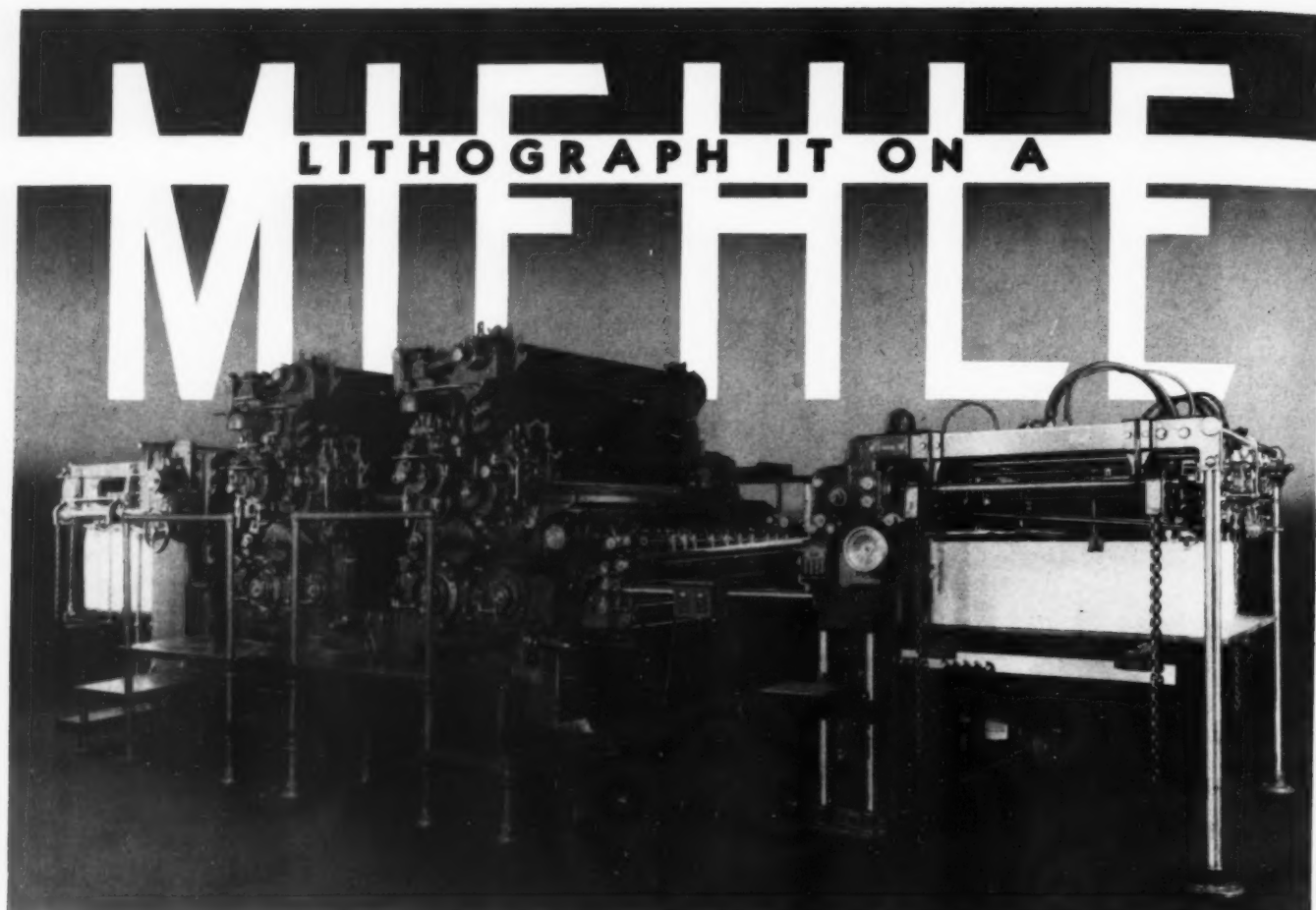
4 Offset Mediums for 4 Offset Needs!

- 1 HAMMER HALFTONE OFFSET FILM NON-HALATION** produces clean, sharp, opaque dots and is the accepted standard for screen reproduction. Its uniformity, wide latitude in exposure and development assure faithful reproductions with the utmost ease in handling.
- 2 HAMMER REGULAR OFFSET FILM**, Clear Base or Non-Halation. This film, without the non-halation feature, is especially recommended for exposures through the back of the film for obtaining the reverse image without the use of a prism on the camera lens. HAMMER REGULAR OFFSET FILM NON-HALATION is ideal for contact negatives and positives.
- 3 HAMMER SPECIAL ORTHO OFFSET FILM NON-HALATION** is a color sensitive emulsion especially suited for use where color correction is necessary. Every quality of the other HAMMER emulsions is included in this fine medium plus the ortho color sensitivity.
- 4 HAMMER SUPER PROCESS FILM**—The fine dot etching which you obtain with HAMMER SUPER PROCESS is convincing evidence of its peerless value for indirect process methods. This medium is used successfully in photolithography and photogravure for line, continuous tone, and screen negatives and positives. This brand has about six times the speed of HALFTONE OFFSET. For rapid work without any sacrifice of quality, here is the medium to use.

(HAMMER SUPER PROCESS and HALFTONE
OFFSET emulsions are also furnished on glass).

*For free sample package of any of these mediums write to the
HAMMER DRY PLATE & FILM CO., Ohio Ave. and Miami St., St. Louis, Mo.*

HAMMER DRY PLATE & FILM CO.
SAINT LOUIS



FINE LITHOGRAPHY

THE modern Miehle Unit-Type Offset Press . . . with its remarkable ease of operation and steady running efficiency . . . can be depended upon for a continuous volume of production.

Fine lithography is assured . . . in the single or multi-color units . . . by Miehle engineered mechanisms and accurate register.

It is the sum total of the year's output that governs the real return on your investment. You will realize new opportunities for profit in using this fast, automatic, dependable equipment.

Miehle Unit-Type Offset Presses are on display in our demonstration rooms at the General Offices, 14th Street and South Damen Ave., Chicago.

Size No.	Maximum Sheet	Speed at Register
69	46 $\frac{1}{2}$ x 67 $\frac{1}{2}$	4100
57	41 $\frac{1}{2}$ x 55 $\frac{1}{2}$	4500

Motored by KIMBLE

MIEHLE PRINTING PRESS & MFG. CO.
CHICAGO NEW YORK

HARRY W. BRINTNALL CO.
SAN FRANCISCO LOS ANGELES SEATTLE

THE PHOTO-LITHOGRAPHER

*Published in the Interests of Lithographers to Increase
Sales Efficiency and Quality*

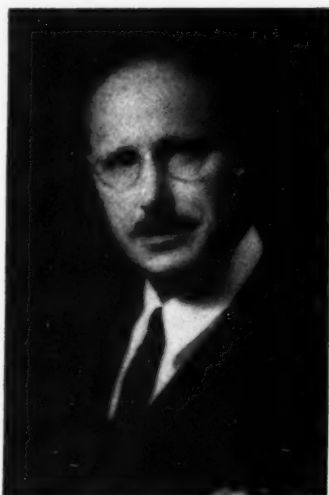
Volume V

MAY, 1937

Number 5

Speakers at Lithographers National Association Convention

MR. A. C. NIELSEN, President of the A. C. Nielsen Co., Chicago, an organization which is devoted to the relatively new science of Marketing Research, will bring to the Lithographers National Association Convention at White Sulphur Springs (May 11, 12 and 13), a factual story with convincing illustrative material, demonstrating the importance of market research in eliminating guesswork from the planning of sales and advertising campaigns.



Significant is the fact that the A. C. Nielsen Company has shown a remarkable growth during the depression, much of which is due to the increased recognition which is being given to such valuable services.

One of the important services developed recently by the A. C. Nielsen Company, is the Nielsen Drug and Food Index, a report and analysis of periodic audits made in several thousand retail drug and grocery stores in all parts of the United States, subscribed to by leading manufacturers of the country and already regarded as a fundamental instrument of policy in the merchandising of many drug and grocery lines. The Index Service has made it possible to check, with a high degree of accuracy, the effect of various forms of point-of-sale advertising, and the A. C. Nielsen Company has developed some very interesting facts and figures on the effectiveness of display and other lithographed material used by retailers. Mr. Nielsen will draw liberally on these data in his talk at the L. N. A. Convention.

TAKING as his subject heading the interesting title, "Speeding Sales by the Printed Word," Mr. L. Rohe Walter, Advertising Manager, The Flintkote Company, is well equipped to call on his own experience for his material.



The Flintkote Company is one of the outstanding users of lithographed Direct Mail material for the promotion of their products for the building trade, such as asphalt and asbestos roofings and sidings, mineral wool and structural insulation, and asphalt emulsion products for the industrial and automotive markets. In 1936, their campaigns, prepared under the personal supervision of Mr. Walter, were awarded national recognition by the Direct Mail Advertising Association as "Direct Mail Leaders," being rated 100% in "general effectiveness," and thus becoming one of the few building material campaigns ever awarded such recognition.

Mr. Walter's background has included account-executive work with the Blackman Company, New York; Sales Promotion Manager for *The National Geographic Magazine*; merchandising council work in New York, in partnership with Mr. J. Parker van Zandt; while, for the past two years, he has occupied his present post of Advertising Manager for Flintkote.

As Chairman of the Publicity Committee of the National Housing Promotion Council, Mr. Walter is an experienced and much sought-after speaker; he is also the author of many articles on merchandising subjects which have appeared in leading trade and industrial publications.

GUARD YOUR COSTS!

By HERBERT H. LEVESS

Certified Public Accountant

New York

GUARD your costs! This phrase should be a constant watchword throughout the photo-lithographic industry, whether a plant be large or small, for the organization that controls its costs, and knows accurately what they are, is from the standpoint of business strategy in a superior position to build profitable connections and maintain them permanently.

Controlling costs means the keeping and utilization of accurate cost records. Cost accounting is usually associated with large companies maintaining extensive office forces. However, it is just as important for the medium or small firm to guard its costs, although it may not be necessary for them to organize systems involving as much detail. In fact, frequent analyses by Dun and Bradstreet and similar authorities have proven that a large proportion of small companies that were compelled to liquidate their businesses did not keep adequate financial records. I believe it to be a justifiable inference that in many cases the lack of cost records as to the progress of these businesses was a major contribution to their failure; that many of these companies would still be in business if they had only realized where the leaks were before their investments were dissipated.

Very recently, one of my associates was called in to audit the records of a trading organization. The company's salesmen were being paid commissions on the basis of a percentage of the gross profits received on the respective sales. The initial audit revealed that certain types of merchandise were being sold actually at a loss and, on top of that, salesmen were receiving commissions on supposed but non-existing profits. The example is far afield from the photo-lithographic industry, but it serves all the better to illustrate my point. If such a state of affairs could exist in a purely trading business, how greater is the likelihood for a similar condition in an industry such as this, where plant investment is heavy and costs are not simple, but rather complex, in determination?

No company can afford to conduct its business without having a fairly accurate knowledge of its costs. Sooner or later lack of such knowledge will catch up with the management, who will then regret that foresight was not exercised at the proper time.

But, it is queried, how do so many people stay in business for years without any accurate cost records? The answer is not always difficult. Many business executives, through years of experience, profiting by errors in their own hit-or-miss system, have acquired a certain ability—a sort of sixth sense—in estimating what a job should cost and what charge should be made therefor. Others may

lose money on individual transactions but make it up on other business obtained through connections, long associations, or friendship. One thing, however, is certain—very few of such outfits progress in the true sense of the word. You will find almost invariably that they are small establishments, the proprietors toiling long hours and often doing the work of two or more men.

We are living in a fast moving era and any company which desires to grow must keep apace of the tempo of the times. Admittedly, progressiveness is greatly a matter of degree. Hence, it seems to be a self-evident truth that the more progressive the management, the greater the success their company will enjoy. Fundamental to an enlightened policy is accurate knowledge of the cost of doing business and the company which has that knowledge is the one which will forge ahead.

It is not the purpose of this article to devise cost systems or to explain the technique of cost accounting. Your association has devised forms which may be adapted to the purposes of the individual company. It is my intention to impress upon the reader the necessity and propriety of keeping complete and accurate cost records. These suggestions are directed primarily to small firms, for the tendency seems to be that the smaller the firm, the greater the laxity or neglect in keeping such data.

In "guarding your costs" it is important that the keeping of detailed records should not be carried to an illogical extreme. Such a procedure may often entail a great volume of work which will far outweigh the benefits to be derived. Every company, after due deliberation and proper advice, must determine what basic information is requisite for proper efficiency, and then provide such a further analysis as will serve a useful purpose without disproportionate effort. No hard and fast rule can be laid down. Each case must be considered and studied in the light of its own problems and peculiar surrounding circumstances. But there are certain definite principles which can be applied by either large or small companies, and it is with the application of these principles that the remainder of this article will deal.

The problem of *keeping accurate costs* is one which should never be lost sight of. The information which proper records divulge should be most useful in guiding the future conduct of your business. The following are some of the important functions of a well-organized cost system:

1. Aid in preparing estimates.
2. Provide a check on actual cost of jobs produced.
3. Provide data for accurate operating statements.

It is axiomatic that costs must be known in advance in order to obtain the most profitable results from estimates submitted. If costs are figured too high, it is more than likely that the job on which the estimate is submitted will not be received. On the other hand, if costs arrived at are lower than those actually incurred, estimates will be submitted at too low a figure and much unprofitable work will go through the plant.

Another factor of vital importance is that if accurate knowledge of costs is available, the company will not be tempted to accept work where the customer demands that an estimate, already brought down to the irreducible minimum, be cut still further. Likewise, the same knowledge may reveal at times that a further reduction is reasonably possible. To summarize: *knowledge of costs should insure profitable estimating.*

Analysis of the cost of production of each job will provide a check upon the accuracy of estimates submitted. After the job has been completed and costs computed, the cost sheet can be compared with the estimate, item for item, and variations noted. There may have been some feature previously overlooked entailing additional labor or materials. It might have taken longer than expected for the job to be finished. The estimate may have been too high as well as too low. Knowledge of these variables is highly desirable in order to guard against similar errors or omissions in the future.

The third function previously listed is not to be lightly regarded. It is the last analysis of the operations and the final results which are the most interesting to the management. What is the net profit for the period? If estimates are correctly prepared and if the cost of production of individual jobs is in close correlation with such estimates, the operating statement must necessarily show reasonably expected profits. So that cost records shall fulfill their proper function, there must be a tie-in with the general books of account. Such a tie-in will facilitate the preparation of accurate operating statements and if expected profits are not reflected it will provide a ready means for allocating the reasons for the discrepancy.

It is indeed surprising to find how many business executives fail to recognize the importance of proper costs. During recent years there has been a very definite trend toward trade association work in various industries to educate members to a realization that a well-functioning cost system is essential to the prosperity of every business. In this connection it is gratifying to know that a comparatively young association as the Photo-Lithographers is encouraging and fostering a proper understanding of cost accounting.

Many industries, through their associations and interchange of ideas between representatives of various concerns, have devised standard costs predetermined upon an analysis of previous experience. These predetermined

costs can be of invaluable assistance if properly used. It is understood that no two companies will have exactly the same circumstances with which to contend, but basic problems will nevertheless be common to both. It is upon these basic situations that standard costs are established, although such standards must necessarily be adjusted to the peculiar circumstances of the particular case.

In order that proper standardization may be accomplished, it is necessary that methods of computing costs be made relatively uniform in the trade, or at least among the members of the same class or size. Companies doing a volume of business within a specific range will be confronted with similar problems. By searching analysis, the reasons for extreme variations in costs can be ascertained and grounds laid for a healthier condition in the industry.

Uniformity of methods does not necessarily result in uniformity of costs. Different conditions and problems encountered by each individual enterprise will tend towards variation. Size of plant, plant efficiency, types of jobs, wage rates and many other factors which are never identical in any two establishments will contribute to the variation. But uniformity of methods will lay a firm foundation for standardization of cost values in the trade and should help in the calculation of a norm, a standard of comparison, by which each firm may measure its own success or failure.

If over a period of time a company finds its costs to be below the standard for the trade, it can feel assured that there are few faults in its operations. On the other hand, if it finds its costs far above the standard, something must necessarily be wrong, and steps should be taken to ascertain the reasons and to make changes where possible.

It is quite difficult to obtain the whole-hearted co-operation of trade members in a project such as we are discussing. Each individual is usually too much concerned with his own immediate problems. But let me again emphasize that each company should *guard its costs*. Executives cannot do this intelligently and efficiently unless they know the basic costs which generally prevail in the trade, and such knowledge can be obtained only by enthusiastic cooperation and interchange of information and ideas between the various firms in the industry.

Guard your costs! A proper system of cost accounts is an effective check upon the conduct of your business. It is an index to the efficiency of your plant. Every outlay under such a system must be charged up to some account or some department and discrepancies will usually come to light. It is the best possible safeguard against wage frauds and leakages of any kind. A proper cost system will prevent unforeseen losses from inefficient estimating, and it must be always borne in mind that *losses prevented are profits earned.*

Mr. Letterpress Printer:

Have You Been Thinking

About OFFSET?

In your investigations you can't afford to overlook the new Monotype-Huebner Photo-Imposing System, especially designed to be sold at a low price for the use of printers whose work does not justify an investment in a photo-composing machine. But recently introduced, ninety-two plants operating small offset presses have already purchased this equipment. It is rapid, accurate and dependable.

**Monotype-Huebner
All Metal
Registering Vacuum Frame**



This simple system offers adequate means of producing offset press plates for black-and-white and simple two- or three-color work. It combines type and halftones on the same press plate by double exposure, and is used for step-and-repeat on line work.

The Monotype-Huebner Photo-Imposing System is operated by means of the M-H Adjustable Layout and Register Table, for making a thoroughly accurate layout of any job within its size limits; the M-H Register Chase, for transferring negatives, which have been taped in registered position over the layout, and the M-H All-Metal Registering Vacuum Frame, for exposing line or halftone negatives on the press plate in exactly the position originally indicated in the prepared layout.

**Monotype-Huebner
Adjustable Layout and
Register Table**



The Layout and Register Table, the Register Chases and the Vacuum Frame are made in two sizes: For Press Plates up to 24 x 26 inches, and up to 29 x 36 inches

The Monotype-Huebner Photo-Imposing System and other Monotype-Huebner and Monotype-Directplate equipments are exclusively licensed under the following Wm. C. Huebner, Huebner-Bleistein and Directplate Corporation patents:

1,170,157	1,277,429	1,391,117	1,452,077	1,521,633	1,675,493	1,780,191	1,839,230	1,865,262	1,952,173
1,182,487	1,291,897	1,396,962	1,452,078	1,556,845	1,682,845	1,780,677	1,846,972	1,870,008	1,957,433
1,195,225	1,300,729	1,413,406	1,468,022	1,576,511	1,702,232	1,780,678	1,847,010	1,912,547	1,978,493
1,201,048	1,334,759	1,414,280	1,482,562	1,639,738	1,703,449	1,795,653	1,855,356	1,914,126	1,984,217
1,216,318	1,377,249	1,417,749	1,496,638	1,647,360	1,715,712	1,809,274	1,857,381	1,914,127	2,000,390
1,222,766	1,377,250	1,425,526	1,510,007	1,668,592	1,727,600	1,828,739	1,860,361	1,923,671	2,021,485
1,225,729	1,391,116	1,431,664	1,513,321	1,675,492	1,736,914	1,832,026	1,860,389	1,933,059	2,021,959

LANSTON MONOTYPE MACHINE COMPANY
Monotype Building, Twenty-fourth at Locust Street, Philadelphia, Penna.

Text set in Monotype Twentieth Century Family. Figures used in panel are Gothic No. 6

A LOOK AT LITHOGRAPHY

By C. W. DICKINSON

Manager Offset Press Division R. Hoe & Co. Inc.

OFFSET printing is the one method of putting ink on paper wherein the stock does not come in contact with the original. This basic fact is in a great measure responsible for many of the troubles of the uninitiated, and, on the other hand accounts for the many beautiful, even startling effects that are being accomplished when the process is handled by experts in the art. The former condition has always been true and probably will be for years to come. The latter is the result of tireless, painstaking determination on the part of the employer, the employee, the press-builder, the ink-maker and the paper mill, all concentrating and working to the ultimate accomplishment.



In the early days of the process, the product, by comparison with some of the work being turned out today, was weak and sickly looking, indeed. I recall how we used to stress the "beautiful softness" of the work when we as press-builders' representatives were trying to sell an offset press to a lithographer who was lambasting us on account of our "blacks not being black." That is all changed today. If the printing is not black to the fullest degree desired it is due entirely to improper handling or inexperience of the pressman or plate-maker.

Craftsmen are practical men and understand the distinction between the different factors that, combined, go to putting ink on paper. Some of you are letterpress printers. You have your problems of layout, composition, lockup, makeready, and presswork. You have skilled artisans in each department of your plants to supervise and do the work of that particular department properly so that when the efforts of all divisions of the plant are brought together the result is a finished job with which your customer is pleased and ready to pay for, with, perhaps, a compliment for the skill you have shown in its production.

Offset printing, too, has its different factors. They are as dissimilar from those of the letterpress printer as day is from night. Here you have the problems of layout, art work, engraving, photography, transferring, and presswork, in full or in part. The finest color lithography or piece of offset printing entails first the skill of the lithographic artist, one of the highest paid artisans in the graphic arts, then the color-separation photographer, next the transferer or plate-maker, and last, but by no means least, the pressman. All must be experts in their particular departments, for a slip on the part of any one of them may be the ruination of the finished job.

I do not want you to get the idea from anything I will say to you that all the letterpress printer has to do to embark in offset printing is to buy an offset press, purchase a press-plate from some one of the relatively few suppliers of offset press-plates, clamp the plate on the proper cylinder of the press, push a button and the wheels will begin to turn and grind out offset printing at from four to seven thousand sheets per hour. I will have to admit I have seen a lot of offset printing that looked as though this was the method followed. On the other hand, we have all seen some letterpress printing that looked even worse.

The point is that both processes take skill in the different steps necessary to the completion of a fine piece of printing. I will grant that a simple black and white type job printed on an offset press may not require as great skill as a color job, provided the job is a reprint of some previously printed job and it does not involve any changes from the original, but still if the job is to be well printed it will require a different kind of experience, the experience that comes only through association with offset printing.

Let us consider for a moment the question of presswork! I was selling offset presses thirty years ago. At that time there were hundreds of skilled lithograph pressmen who were adept in the operation of flat-bed lithograph presses printing from great, clumsy, heavy lithograph stones direct from the stone to the paper. Yet as the sales of offset presses increased we heard the cry on all sides: "Where can I get an offset pressman?" The flat-bed men, although they were familiar with surface printing, the proper handling of chemicals and the relation of water to ink, had difficulty in mastering the offset press because while this process was also surface (not relief) printing, it was also indirect printing. The design on the press-plate was, and still is, printed from the press-plate to the rubber blanket, and from that to the paper, which injected an entirely different condition. It takes a lithograph pressman, as a rule, four years to secure his journeyman's card, starting as a helper to an old experienced offset pressman. I have never heard of a printer being content to employ a lithograph or offset pressman, who has become skilled in the handling of a rotary offset press, to operate a rotary letterpress. Yet we frequently hear the statement that the offset press, is so easy to handle that any letterpressman, without any previous experience, can learn to operate it during the short period in which the offset press is being erected in the letterprinter's plant. I know of several offset presses that have been purchased by letterpress printers who have been misled by this thought with the result that after months of worry and endless expense the press was discarded and not through any fault of the press itself. It would have been much better to employ a man who knew offset printing and offset processes; then expense would have been saved and success assured.

I doubt if there is a flat-bed letter pressman who would accept a job running rotary letterpresses for the Crowell Publishing Company (if he could get it) and yet I say to you that would be easier for you than attempting to operate successfully an offset press where it is not always possible to force more ink to the paper by simply opening the ink fountain a little more. Perhaps you should have closed your water fountain slightly or possibly the acid in your water fountain was not right for the particular job you were running, or maybe the pressure between the plate and blanket cylinders was not in proper relation to that between the blanket and impression cylinders, or again possibly the fault lay in the plate in the first place, because it may have been light at that point in making the transfer. Do you think a letter pressman, regardless of how versatile he may be, would be competent to merely look at an offset press-plate and determine in advance whether or not it would print properly after it was clamped to the plate-cylinder of an offset press?

I trust you will not get the impression that I am belittling the ability of the letter pressman in the slightest degree. I am simply trying to give you some truths as I see them. Personally, I think a lithographic transferer would make a horrible mess as a letterpress compositor. I think a compositor or lockup man would

have a terrible time trying to do the job of a lithographic transfer or plate-maker. I cannot visualize an offset pressman cutting overlays for a fine halftone job on *Life*, although he is familiar with rotary presses and *Life* is printed on rotary presses and I think, inversely, the letter-pressman who attempts to operate an offset press has picked out a real job for himself if he expects to compete in quality of product and production with the experienced offset pressman.

The word "printing" takes in a vast territory. The chap up on the fourth floor of a rickety left building, whose equipment consists of some tables and racks, and whose materials are sheets of card board, pots of paint and brushes, is printing; you men operating platens, verticals, horizontals, ponies, or large two-revolution presses are printing; the great newspapers running mammoth web perfecting presses, utilizing stereotype plates, for only a relative few hours of the day are printing; the big publishers of magazines operating web presses utilizing electrotype plates are printing; the Neo-Gravure Company and others in this field producing beautiful pictorial supplements are printing; the Bureau of Engraving and Printing at Washington, turning out millions of pieces of paper money and stamps is printing; and last but by no means least those large and small concerns scattered all over the country using thin sheets of zinc or aluminum as a surface for the work are printing. How then are we to differentiate between them?

The first mentioned is obviously the sign-printer. He is restricted in his sales and production to the extremely short runs, down to a minimum of but one sheet of a kind and seldom more than a dozen or so of a kind; the next three can be placed in one group known as relief printers, entailing overlays and either hard or soft packing as the case may be in order to get an even impression; the next two where either steel or copper is used and the design is engraved or etched into and below the surface of the plates are intaglio printers; while the last, the offset printer has his work laid on the surface of the press plate regardless of whether the process is the albumen or so called "deep-etch," a rank misnomer, is really a chemical printer as chemistry enters largely into the successful operation of any offset press. Here it is offset printing with which we are chiefly concerned.

It may surprise some of you to know that offset printing did not originate with that first paper offset press of either Alex. Sherwood or Ira Rubel. The company I have the honor to represent had been making offset presses for use in the metal decorating field before that time. True these presses were not of the same type of that first paper offset press, but lithographing on tin and steel had been done prior to 1906 on offset presses where the subject was printed from the original to a rubber blanket clamped around a cylinder and reprinted or offset on the metal. Incidentally the growth of the metal decorating industry has been amazing in the past two or three years. An almost endless amount of different products are now being put up in metal containers of aluminum, tin and steel. These sheets of metal have to be lithographed or offset printed before the container itself is finally formed. Over ninety per cent of this work is now being done on rotary offset presses of the single and two color types. Until a little over two years ago most of the printing was done on hand-fed rotary offset presses at speeds of from about 3,000 to 3,600 sheets per hour, depending upon the skill of the human feeder.

My company is now producing automatic rotary offset presses that are being successfully operated at speeds of from 4,200 to 5,400 sheets per hour. We have also found a way to handle metals from the lightest aluminum sheets up through the heavier aluminum and tin plate sheets to sheet sheets that weigh thirty pounds each and at the same time do the very highest class of lithography on them. Until about three years ago the bulk of metal offset printing was done with flat colors. This necessitated

a larger number of printings to secure the desired final effects. Now the camera has found its way into the plants of the metal decorators to a steadily increasing degree with the result that process work is quite common in a large number of plants thus reducing the number of impressions required to finish the job. The beer-can has given a new impetus to the metal decorating field. I was in a can plant two weeks ago where two can-forming machines were turning out beer-cans at the rate of 300,000 cans per day and the tin sheets had to be lithographed in this particular case in four colors before the can machines got the sheets. And this was but one of the many types of offset-printed cans that were being produced in this plant.

Offset printing, whether it be on metal or paper or card-board, is strictly a lithographic process. This is just as much the case today as it was in 1906 when the first paper offset press appeared. There have been changes, of course. The old time lithographic engraver, who laboriously scratched painstakingly on a small engraving stone, creating your letter-head, bill-head, bank-check or whatever the job might have been, has almost entirely disappeared from the industry. Perhaps he has gone to join that army of old-time hand "comps" who used to "spike straight matter" on the big dailies and the smaller weeklies. Those big dailies would not be as big as they are today if they were still dependent on those old timers. The type-setting machines have disposed of them; and the camera, with the support of the letter artist and vignette artist, has disposed of the old lithograph engraver. If the engraver made a false cut on the stone it was just too bad for the final effect, therefore he had to work with extreme care and necessarily slowly. Now where the subject is drawn on card board to any convenient size regardless of what the job may call for, a false stroke can be rubbed out and corrected. Then when the "art work" is completed the camera will come to the artist's aid and enlarge or reduce, usually the latter, the subject to the desired printing size. Also the same art work can be used for different jobs where the subject is the same except for the finished size of the print.

The lithographic artist still reigns in the large color houses, but here again the camera has encroached upon his previous labors. Where even twenty years ago he had to make each and every color plate for a multicolor job, his chief duty now, in the great majority of plants, is correcting color separation negatives. Just to show what strides have been made in this direction I will tell you a little story out of my personal experience. I happened to be connected with a press-builder that was the first in the field to offer for general sale a paper offset press. Those presses were first used for black and white commercial work and that is about all they would print. We sold a lot of them for the times. At first the criticisms of the so called "damp printers" among the lithographers that our "blacks were not black" were, as I look back on it, well founded. Once in a while a pressman would get the right job, the right paper, catch the right combination of water in relation to ink, and with a lot of luck thrown in, be able to produce a job that was really a good black. I recall that whenever this happened we used to try to get a sample to show to others in an effort to break down the resistance to the offset process. But we were making headway with black printing! Then some lithographer wanted to print a little dab of color on a letter-head—perhaps a line in red or a trade mark in blue. Then the trouble started. The red was a weak pink when it got to the paper, and the blue might be a sickly washed-out tint. However some slight improvement was gradually taking place but still it was apparently impossible to get the heavy, strong, solid colors that the color lithographers demanded, with the result that these concerns were sticking to the old flat-beds and direct rotaries.

I determined to invade the color field with the offset press. But I could find no lithographer with sufficient courage to buy a

press and make the attempt on the strength of the, from his standpoint, poor sample I could show him. I therefore bought an oil painting of Mary Garden, took it to one of my customers who had a splendid reputation for producing both fine commercial and color work. I told him I wanted the picture reproduced on the offset press I had sold him and that I would take the responsibility for the results. Well I remember the conference that took place over this problem! Joining me, around a big table with this oil painting propped up before us, were the president of the company, the foreman of the art department, the foreman of the transfer department and the foreman of the pressroom. None of these practical men were enthusiastic about undertaking the commission. Finally, to scare me off, I guess, the foreman of the art department said he could make the original color stones but that the job would take eighteen colors. The transfer foreman admitted he could make the transfer press plates from the color stones but the foreman of the press room was skeptical about the results he would be able to get in the actual printing of the press plates. I told them all to go ahead but before it was finally finished four more colors had to be added, making twenty-two in all. It was a really creditable job and was the first color job to be attempted on an offset press even if a better one could be produced today with one third the number of printings. It proved that color work could be done on an offset press and opened the way for some of the beautiful effects you see every day now, in catalog, direct mail, calendar and other types of offset printing. At that time the seemingly great number of printings was not so important for much of the lithographic color work of the day required a minimum of eight colors and frequently as many as twelve to fifteen, but these printings were being made on presses that were capable of turning out about 600 to 700 sheets per hour. There is some difference between that actual production and the claimed running speed of 7,000 per hour to register of today. Although I have never seen an offset press of 41" x 54" size actually running in a lithograph or printing plant on a color job to register at anywhere near that speed, I believe that the time may come, and perhaps sooner than we think, when this, and even higher speeds, will be possible on a sheet-fed offset press. To accomplish this however there must be nearly perfect co-ordination of sheet separation, positive register, and, last but by no means least, delivery of the printed sheets in a well ordered pile in the deliver of the press. So far as we are concerned, we know how to deliver cut sheets in a pile at even 9,000 per hour. We are doing this on some of our rotary presses. We are doing it on a Hoe offset press of the roll-feed type, where we are cutting the sheets from the roll evenly and squarely and delivering them at this speed from a fifty-inch roll.

Where thirty years ago the offset press was found almost exclusively in the lithograph plants, or at most in those plants that operated both lithograph and letterpress departments, we find today a constantly growing demand on the part of the printers for offset presses to augment their present equipment. This demand comes from the little fellows in the cities and the smaller towns and occasionally from the large letterpress printers who wish more flexible manufacturing methods to support the demands being made on their sales departments from their customers who do not wish to divide their business or from the customer who wishes a job produced that is part letterpress and part offset. This type of job is growing in popularity. There is no questioning the fact that certain effects which are easily obtained by the offset method are utterly impossible from a comparative quality standpoint on the letter-press. The reverse is equally true. The Hoe Company is the largest concern in the world building presses for putting ink on paper or metal in any one of the various forms known. We build offset presses for printing on paper, card board, tin and sheet steel; we build presses for

printing from steel plates, used by the Government and bank note companies for printing money, stamps, stocks, bonds, etc.; we build sheet-fed rotary presses, utilizing electrotypes as the printing medium; we build rotogravure presses for monotone and multicolor printing by this process; we build rotary web-fed magazine presses, both black and white and multicolor, some of the greatest and best known and best printed publications in this class are produced on Hoes; we build the fastest black and white and color newspaper presses obtainable and we know that there is a field for each and we know that no one type will drive the other out of existence. We pour all our own castings and we do all our own machining of the various parts that go into making up the various presses we build and at present we have over 3,000 employees on our payrolls of our three great plants. We have every confidence in the future of the Graphic Arts as indicated by the fact we have nearly 100 men in our engineering department who are constantly striving to furnish you with better and simpler equipment of all kinds for putting ink on paper. Our business is so large that we have found it necessary to departmentalize it and I happen to be put in charge of the Offset Press Division. In this department our average unit of sale is naturally small when compared with a big four-unit rotogravure press with a complicated folder built into it or a 64-page magazine press with its folder or a twelve-unit, three folder newspaper press combination, but regardless of this fact nearly twenty percent of our last year's sales were for Hoe offset presses so I cannot help but feel that the demand for offset presses is going on to unheard-of proportions.

Offset presses are now obtainable from six or seven different manufacturers. At least three of them are concentrating on the smaller sizes, ranging from 14" x 20" up to perhaps 22" x 34" in size of stocks handled as maximums. There seems to be quite a flurry of sales in the last two years for offset presses taking maximum sheets of 14" x 20" and 17" x 22", two companies having been quite active in disposing of numbers of these machines. Some of these presses have been very profitable to their owners, others have been the source of a lot of severe headaches. One large press manufacturer whose principal business is along other lines of presses has been content to standardize on chiefly two sizes of presses, both made in single, two, three and four color types. Another builder has produced probably more different sizes and types from the little fellows of about 17" x 22" in size to the big 46" x 68" four colors than any other builder. We have been content to confine our offset press manufacturing and sales efforts to three sizes in two types up to the present time so far as the conventional one-side sheet-fed machines are concerned. We have built several sheet-fed perfecting offset presses of large size, 44" x 64" that are turning out a very good grade of black and white offset printing, the kind of work the presses were designed for, printing both sides of the paper simultaneously. We have one large web perfecting offset press in operation doing a very clean type of offset printing. This press is designed to print paper stocks from the roll in either one or two colors on one side of the web or one color on both sides of the web. This was the first large-sized web offset press to be built in this country that was successful in operating at a speed of 9,000 cylinder revolutions per hour.

With the constantly growing demand for larger and faster offset presses, there will, in my judgment, have to be radical changes in offset press construction. An offset press is a rotary press, nothing more! The first rotary press to be built in the world was built by Hoe in 1845—ninety two years ago. We have, therefore, had nearly a century of experience in building all kinds of rotary presses for all purposes, mentioned earlier in this discussion. This vast experience has taught us that there are certain elements that must not be eliminated, slighted, or cheapened in the construction of rotary presses where fast

speed is required if you, as the operators of these presses, are to have machines that will run smoothly, without vibration.

Such an offset press will demand a continuous, heavy cast iron base under the entire machine, to properly support the side frames of the press and delivery in order that they may always be in line and parallel with each other regardless of any settling of floors on which the press may be erected. Light, cheap, cored side frames will disappear in favor of heavy, solid frames, which, in turn will enable the press to be operated at high speeds without springing or vibration. Cylinders will be much heavier, particularly as to thickness of cylinder walls. They will have to be ground, after turning, to one half of one thousandth on the diameter to give perfect concentricity. They will have to be dynamically and statically balanced to eliminate every particle of centrifugal "throw" that develops in a rapidly rotating cylinder, possessing openings in it, where this treatment is avoided. Cylinder journals will be much heavier than the conventional journals of the present day to eliminate spring and whip at such fast surface speeds. Existing capped cylinder journals and bushed cylinder bearings, no matter how heavy or what material is used for the bushing, will be replaced with the more serviceable and frictionless roller or ball bearing which will permit high rotation of the cylinders with complete smoothness and entire elimination of spring between them when taking the impression. On any offset press there are numberless small bushed bearings. These will be replaced with small ball, roller or needle bearings to entirely eliminate the constant wear that today exists in many offset presses regardless of size. All small parts will be designed for the particular press they are intended to operate on, rather than be made in quantities in order to save a few cents per part in their manufacture resulting in these parts being sufficiently strong for their work on some presses but entirely too weak for the same job on larger presses causing breaks and the accompanying repair bills which the press-owner has to pay, indirectly adding to the original cost of the press he bought at a lower price. The entire machine will be made much heavier, insuring smoother running, better printing, longer life and less cost for upkeep. All of these things will materially increase the first cost of the press but will proportionately insure constant running of it when started on production with a corresponding reduction in maintenance costs.

I believe that more and more of the class of work that entails expensive electrotypes, involving careful lockup and hours of make-ready on flat bed and rotary letter presses will gravitate to the offset press. This will be true because the average cost of an offset press-plate ready to be quickly clamped to the cylinder of an offset press is less than the bare cost of the letterpress electrotypes alone, thus saving the entire cost of the lockup and at least sixty per cent of the make-ready. Then when the offset press is started it will run as fast as the rotary letterpress, if not actually faster, and certainly three times as fast as the flat-bed, size for size.

The range of products that it is possible to produce on a well built, properly designed offset press in the hands of the competent workman backed up by suitable materials such as paper and ink for the particular job involved, coupled with carefully made press-plates, is almost limitless. The offset press now monopolizes the commercial stationery field and the bank stationery field; it is making rapid inroads on the direct-mail advertising field, including particularly the color field; colored magazine inserts and magazine covers are produced by the offset press in vast quantities. By far the greater proportion of the colored calendars that are produced in this country each year are turned out on offset presses. At least three very large mail-order catalogues, totaling millions of books are produced on offset presses. One frequently sees an offset printed catalogue, done in full or in part by the process. Several of our largest insurance companies are turning out quantities of hand-books, printed in two or three sizes from photo negatives of type composition set but once.

The latest branch of the Graphic Arts to undertake the offset process is one large newspaper. We are now building a large offset press taking paper rolls 66 $\frac{1}{4}$ " wide which, when finished, will enable the publisher to print a sixteen page paper in any combination of from one to four colors on one or both sides of the web at one and the same time, using 120-line screen halftone originals rather than the 60 line screen conventionally used in this sort of printing. This press will weigh approximately eighty tons and will have a speed of 12,500 cylinder revolutions per hour.

Moisture Content in Paper and Its Effect on Color Register

BY application to the Superintendent of Documents, Washington, D. C., for five cents one can obtain a copy of a twelve-page pamphlet entitled, *Treatment Of Offset Papers for Optimum Register*. This pamphlet, Research Paper RP859, is part of volume sixteen of the *Journal of Research of the National Bureau of Standards*. It describes some experiments made in the air-conditioned offset press-room of the Coast and Geodetic Survey of the U. S. Department of Commerce. The conclusions arrived at by Charles G. Weber and Martin N. V. Geib, who conducted the experiments, are that in jobs requiring fine register they should not be started unless the paper is moist relative to the air in the press room, as determined by the sword hygrometer or other equivalent methods. Another conclusion was that when the moisture content of the paper at the mill is correct, it will remain practically unchanged during shipment and storage provided it is properly packed in cases that have suitable liners, the asphalt duplex type having been found very effective.

Several copies have been received of an offset weekly newspaper, *Oak and Acorn*, issued by the students of Menlo School and Junior College, at Menlo, Calif. The copy is written by the class in journalism at this school and is then put in type at a trade-composition plant. Under the supervision of their instructor, the students paste up the proofs for reproduction, and also supply photographs, cartoons, and other drawings they have made. Thus, they have opportunity to secure practical experience in the entire production of a newspaper. After the page proofs are arranged, and have met the approval of the instructor, they are sent to a photo-lithographic plant, where the newspaper is printed on a Webendorfer press. The members of the faculty of this school, as well as the students, are enthusiastic over the publication. The fact that the photo-lithographic process permits an unlimited use of photographs taken by the students of local happenings around the college make the newspaper unique among publications of its kind.

The success of this newspaper would seem to offer a suggestion to all photo-lithographers that here is an opportunity for more and profitable business. There are schools and colleges everywhere to whom the suggestion of a newspaper like *Oak and Acorn* should appeal.

Designing Magazine Covers

WE were once amused by the somewhat mordant humor of the wife of a physician who, on meeting the editor of a magazine, copies of which no longer mar the appearance of orderly newsstands, remarked, "I have long wanted to tell you how much we like your magazine. The office is never without a copy or two." And then added by way of explanation, "It's the only one from which no one ever steals the covers."

This editor selected covers of weird, pseudo ultra-modern design. Gaudy they were and certainly distinctive, but no one liked them. Having attracted the roving eye of a prospective purchaser they repelled further inspection. They failed, as the magazine itself failed, because they were superficial.

A magazine cover is not designed to be kept in a scrapbook or framed and hung upon a wall. It need not be a thing of lasting beauty. But it has certain functions which must be thoroughly understood by a publisher who would make the most of this most important advertising medium.

THE FUNCTIONS OF A COVER

The three main purposes of a magazine cover are to identify the publication, to suggest directly or indirectly its editorial content, and to attract attention when displayed upon a stand. The cover is sometimes compared to a poster, sometimes to a package. Actually it is a combination of the two. The selection of a cover depends upon the editorial content of the magazine, the type of reader expected and the method of distribution to be depended on for the greater part of its circulation.

The magazine sold widely on the newsstands competes with hundreds of other publications and its cover can be a powerful selling agent. The magazine sold by subscription and mailed to its subscribers' homes or offices must compete with time and other duties for its due attention. Its cover must create the urge to open and see what is inside. Since the average magazine is distributed by both methods the cover should effect both purposes.

FOUR CLASSIFICATIONS OF COVERS

The various types of covers may be roughly divided into four classifications:

1. The formal stylized cover which is changed only in minor details of date and possibly color of stock from issue to issue.

2. The cover which carries the full table of contents.

3. The pure poster type which is illustrated wholly for attention value and which offers little clue as to the editorial content of the publication.

4. The semi-poster cover which by its illustration indirectly suggests the type of editorial matter.

Infinite variations and combinations of these four primary types are possible.

COVER POLICY

A publisher must decide upon a fairly rigid editorial policy when planning a new magazine. The reader wants to know what he is buying. Enjoying one copy, he wishes to find similar material in subsequent issues. Similarly, there should be a rigid cover policy so that the reader will instantly say, "This is another copy of the magazine I found interesting last month." Essentially the cover offers immediate identification.

The first consideration is given to the title. Easily visible it should predominate without interfering with the illustrative part of the cover. Type matter too, should be strong enough to be legible at a distance in uncertain light. If both are lettered wider opportunity exists to co-ordinate design with reader interest. However, much latitude may be given to illustration and copy, the title which forms the basic framework of the whole should not be altered.

The framework created, the general style of cover to be used is decided upon.

The very formal stylized cover may possibly suggest dignity, but seldom is that enough. Dignity is hard pushed to withstand attacks of competition. The formal cover for all its familiarity to old readers lacks a selling hook to secure new ones. Such a cover is scarcely worthy of long consideration.

The cover which carries a full table of contents is becoming steadily more popular. It has much in its favor. Not often does a magazine purchaser dawdle at a stand thumbing various copies, scanning pages as in a bookstall. Hurried the inspection, quick the sale. Yet the customer hesitates to buy a pig in a poke. The table of contents does his skimming for him. A title or two intrigues him and the sale is made. Yet this type lacks attention value. The use of color is limited. This month's or this week's cover at first glance appears much the same as that

of the previous issue. The serious magazine appealing to intelligent readers can best afford to pass up the superficial appeal of color and illustration and devote its cover to a listing of titles and authors. Better than any other this type carries the urge to open to those who have bought the publication or received it in the mail; better than any other it announces what is offered for the buyer's money.

The pure poster cover offers to its designer the widest latitude. Unhampered by restrictions of a set policy or by consideration of the contents of the magazine, he may devote his full attention to attracting attention. Seasonable illustrations which undoubtedly have pulling power are possible. The whole field of illustration is open to him. But missing is the invitation to open the magazine. Lacking the urge to read. Only half the job is done. A poster, however lovely, is not enough.

The semi-poster type which indirectly mirrors the contents goes a step further and includes the urge to open. The hunting scene in the sportsman's magazine or the vivid blond about to be knifed on the cover of a detective magazine both will sell copies because they are pictorial representations of the editorial content. The restrictions of this policy need not stultify the designer's imagination so that his covers are too similar to one another. There is still plenty of latitude within his set confines.

A combination of two or more of these basic types is generally the most successful. The most widely used procedure is to combine the poster with a complete or partial listing of the contents. The poster to attract attention, the listing to clinch the sale. It is an open question how much of the contents should be listed. The complete table generally necessitates the use of small type not particularly readable at any distance. The bold headline announcing one or two items of particular interest catches the eye but leaves unadvertised other items which might prove even more interesting to many readers. Preferable, however, is the omission of desirable cover material to creating a hodge podge by attempting to include too much.

THE USE OF COLOR

The easy and obvious way to attract attention is by using color, but color has its disadvantages. When selecting a color scheme it is necessary to consider where the magazine will be sold. Look at the section of a newsstand where the pulps are displayed. Each cover fairly froths with garish reds and brilliant blues and greens. Color runs red riot.

Singly each cover fairly screams bloody murder, which is what the publisher intended. But grouped together the pulps are seemingly consumed by their own flame. No one stands out. The covers, for all their fantastic gaudiness, become drab and colorless and hang dejectedly upon their hooks or dully lie in neat little piles. Color alone is not enough. It must be used with care and with discrimination.

Consider where the magazine is to be placed on sale, and what its competition is. Is color really needed to attract attention? If so, who is it to attract? Men or women? The conservative and intelligent reader, or the reader looking for a few hours of drugged excitement? Is there a seasonable color to be used? Does the nature of the magazine demand sharp, bold, clean-cut effects or will delicate pastel shading better suggest its content?

Simplicity is the keynote of good poster design. The cover which is admired most when it lies on the living room table is often least effective as a poster. Illustrations inside the covers may be planned for leisured examination, but the effect of the cover itself must be instantaneous.

The illustration must not hold the eye too long. It should catch the eye and turn it to the title and then to whatever other copy there may be. One need not buy a magazine to look at its cover. The browser will look his fill and, satisfied, purchase another magazine, the cover of which persuades him that the contents are worth his while. The too-lovely cover may be a hollow shell.

Color then must be used with care and with due regard for the method of reproduction. Even the sharp clean detail of letter press may easily be lost by ineffective lighting if the detail is too fine. Use letter press for clarity and brilliance and let your illustrations use the process to its full advantage. Futile it is to attempt to give brilliance to a fuzzy sketch by emphasizing its plethora of detail.

Use lithography when delicate shadings and pastel colors are desired. Its infinite variations of tone make it ideal for fashion magazines and others in which accurate coloring is desired. Particularly simple should the lithographed cover be. Its subdued tonal values are contrast enough to more vivid covers displaced nearby. Make the most of each color by showing it in broad sweeping strokes.

Some magazines with large circulation are using gravure for their covers. The process has improved rapidly in the past few years, but reproductions in color are still far from accurate. It can, however, carry a rugged strength and depth of color that is

effective. Detailed effects are utterly lost but bold outlines are given added brilliance.

SELECTING THE ILLUSTRATION

In selecting an illustration the editor does best who sticks to variations of old and proven themes. The blue-eyed baby on the woman's magazine can no more fail than can, on another type of magazine, the luscious limbed beauty who purports to relate her life and loves in open confessional for the price of fifteen cents. Few editors can afford to pay the price of originality in loss of reader interest.

The appeal must be universal. A magnificent Newfoundland on a magazine for dog lovers might seem appropriate. But where is its appeal to the woman concerned about her Pomeranian's loss of appetite? There may be an article on the feeding of Pomeranians hidden away on page forty-three, but the big woolly Newfoundland will scare her off. An awkward tumbling mass of mongrel puppies will appeal equally to the breeder of thoroughbreds or the baby-talker. Neither will cork walls and translucent furniture sell a home decorations magazine to the woman who wants to buy one or two pieces of furniture and rehang her draperies. Decorators it will sell but not the mass market.

Photographs reproduced in black and white seldom stand out sufficiently to predominate on display. The publications which use them do so because the editorial content is pictorial and the

photograph seems most appropriate. If photographs must be used then must the title be vividly outstanding or a border used which focuses attention on illustration, title and text.

THE PHYSICAL ASPECTS OF THE COVER

The cover as well as being a poster is a package. It must withstand abuse and repel dirt. It must protect its contents adequately. The firm strong cover will not soon be dog-eared. A smooth-finished stock will not become as easily thumb-marked or dusty as will a softer stock.

Varnishing or laminating a cover with cellophane will prolong its life. More important, this treatment will brighten the cover to a remarkable degree, accentuating color and design. A cellophane cover may occasionally be used for this same purpose and novel effects may be obtained from the color-filter qualities of a colored cellophane.

The wise publisher is the one who takes the rough sketch for his next cover and places it in a newsstand to see how it stands out from its competitors. He takes infinite pains with each step in its production. The cover is a far-traveling salesman worth a good expenditure of work and money.

Finally the editor, having done his very best in all details, sends forth his publication resplendent in its bright new cover with the prayer that some small section of the fickle public may notice it and buy.

Appraisal of Offset Values

AN apparent absence of screen is one of the characteristics of offset lithography which, together with its soft, warm tones, made this process, right from the beginning, an effective medium for the reproduction of art subjects, labels and posters. Today, offset is virtually unlimited in its scope, being employed not only by the producers of labels and posters, and the publishers of prints and art books, but also by the advertisers of this product and that, and the publishers of several of

our most famous periodicals. One of the advantages of offset is that with this process one can cover with a remarkably even lay of ink unusually large areas of paper. Offset is often used in making "blow-ups" of small pictures from original copy or engravings for use as window or interior displays. And, with the increasing demand for large road maps by considerably more than twenty million motorists, the volume of offset production has been greatly increased.—*Westvaco Inspirations*.

All the important key-men in your organization should attend the Cleveland convention of The National Association of Photo-Lithographers. The date is October 14th, 15th, and 16th.

SELLING PHOTO-OFFSET LITHOGRAPHY

THE THIRD OF A SERIES OF "BRASS TACK"
ARTICLES

By WILLIAM WOLFSON



WITHOUT basic knowledge and ability cultivated through much practice, no sane person would attempt to sit down at a piano and render a difficult musical composition. He could not amateurishly fumble through, let alone perform with the skill of a master. Yet there are many who attempt to sell who possess little or no understanding of what they are about.

For example, what salesman engaged in selling photo-offset lithography has asked himself, "Can I properly define my own proposition to such extent there emerges from this definition the task I must successfully do?" Or, "How does my proposition stack up against the businesses of the people I call upon?"

It seems to me that now is the time to delve a bit into fundamentals. Therefore, I outline in condensed form a selling system I designate as "Cadoo."

Cadool is not a wheeze nor a sneeze! Each letter symbolizes a significant element of the system.

C stands for **CONTACT**. Make many desirable contacts. There's footwork required; but intelligent headwork will save your feet. Try ingenuity. Try strategem. Plan different types of approach.

A stands for **ACQUAINTANCESHIP**. People like to buy from someone they know. Many salesmen imagine prospects know them well when they don't—even after many calls. To speedily ripen casual acquaintanceship into the intimacy which leads to orders, make the next element given part of your selling technique.

D stands for **DEMONSTRATION**. Sales talk by itself is not

enough. Demonstrate something at every call. Demonstrations should be educational, entertaining, convincing. Inject showmanship. You will sell sooner, the more readily; and your man will not forget you as soon as you leave; he will remember you when you come back.

O stands for **OBVIOUS NEEDS**. Needs like raw materials and supplies continuously used—or a void, a lack, something missing, which confronts your man all the time.

O (final) stands for **OBSCURE NEEDS**. Needs that are hidden. Needs that may be unknown, but vaguely felt, or inadequately covered.

That's all there is to the Cadool system. Simple, Unforgettable. However, knowledge and application of such knowledge are not synonymous. You must rightly apply what you know and what you learn.

The first thing to do is to check your proposition against the two "O's"—give it the "OO" (once over) so to speak. What "O" does your proposition fall under?

In the early days of photo-offset lithographic selling, when comparatively few people knew about the reproduction method, did not know how to apply it, they welcomed the salesman who explained this versatile process. Because of the depression, the low rates of combination runs provided a means of saving money.

These days most people know about photo-offset lithography. Any number of salesmen of competitive houses call upon them. They place orders for photo-offset lithography as they do for printing, for general supplies, for the things they need. From one point of view, then,



*The salesman homeward plods his weary way,
Discouraged by another futile day,*



*Until no bit of learning he'll pass by;
And what he learns, he will at once apply.*



THE PHOTO-LITHOGRAPHER

photo-offset lithography might be classified under the initial "O"—or Obvious Needs.

Your task then becomes apparent. You will have to switch the prospect from present supplies and the representatives of such supplies over to your house and yourself.

How? That's entirely up to you and to your company. Here are some of the ways:

LOWER PRICES. Indeed, it is a pity that some plants, regardless of costs, and in the mistaken belief that greater volume of sales must mean more profits, disregard established rates for combination work, slash charges on special jobs. Naturally, they secure business on this basis. If, however, lower prices can be proffered because of greater efficiency and management, individual methods of production, and yet make the customary margin of profit, then the lure of lower prices is legitimate.

HIGHER QUALITY. A plant may be equipped with finest presses, cameras, and other mechanical things. They may pay well for first-class technical help. Hence, they can turn out a much better grade of work. Business firms who desire to buy fine work will pay for it. When influenced by the lower estimates of plants that are set up for low price only, with second-hand obsolete equipment and inferior workers, the expected quality does not materialize, and the quality buyer goes where he can get it.

GREATER CONVENIENCES. For example, there are many buyers of combination work who will not call for a messenger boy but bring their jobs to the office of the photo-offset lithographer. If he locates a plant close to his own address, he brings his business there because of the greater convenience.

There are also special advantages or benefits. Things along the lines mentioned will cause the switch-over. Another way is for the salesman to make himself so well-known (or liked) that he is given the business, all other factors being equal.

There are salesmen with winning personalities. In my brochure, *The Master Salesman*, wherein one salesman is put through a mystical initiation, appears the following passages which illustrate this type of salesman:

"MYSELF: 'But what of the salesmen who are totally ignorant, understand but little or are indifferent? I have seen big money-earners who lead their respective sales force because of their charm and personality. Their physical appearance pleases. Their inner nature is such, any place they happen to be becomes brighter and the more joyous for their presence. Envious mates look upon them and think—*Their God-given character, fine physique, their innate enthusiasm—these comprise the essence of pure salesmanship.*'"



"MY MENTOR: 'Not so. They win success in selling because they are children of the one extreme. They may be considered as perched atop of a straight line. Until that line is curved to form the perfect circle they are but glorified order-takers.

"Such personalities are successful only in fields where customers have the knowledge and the understanding of what is proffered them, who know what they want, and who take pleasure in favoring these gifted individuals. Otherwise the smile of welcome may turn to the frown of annoyance; and although in social life such persons are received with open arms, they find themselves out of place in business offices.

"Think to what further heights such blessed men could mount were they the masters of other degrees."

But let us go on to the final "O" of the Cadoo system—that signifies obscure needs. You might as well, for you will be in position to analyze any selling proposition in which you find yourself.

If your proposition must be classified under the obscure needs division, you will find this: That the need for the services your commodities are designed to cover is slight, overlooked, or unknown to your prospect. It may even be already covered after a fashion, but inefficiently or inadequately.

Your task, then, is to awaken your man; to fire him with a burning desire so consuming that he does not slip back into complaisant inertia, and is not stopped by the shock of an unexpected expenditure.

Please note one important phase of difference between obvious needs and obscure needs. The needs that are obvious are recognized, *and expenditures of money are expected and anticipated.* This does not hold true with obscure needs.

Another important fact is this: The salesman with cultivated and keen perception is not bound by the restrictions shown. He can, particularly in the selling of photo-offset lithography, apply his knowledge not against the obvious but the obscure. By so doing, he steps free of limitations that confine the indifferent and the uninformed salesman.

Some of the elements of this Cadoo system of selling have been suggested in previous and disconnected articles, as:

"Let's Get Acquainted," which pertained to acquaintanceship; "Sales Demonstration," which serves as an introduction to one of the most powerful forces of application; The initial article, which discussed one effective way to secure desirable contacts.

Beginning next month, the elements of the system will be taken up in greater and more illuminating detail.



BLANKET TROUBLES

By DR. L. R. MELOY

IT has been suggested by some of our readers that a discussion of the rubber offset blanket and the cause and cure of some of its ailments be given in THE PHOTO-LITHOGRAPHER. This is an important subject, but it will not be possible to take up every trouble arising on the press, and it must be remembered that carelessness of the operator is not within the scope of this article. We know that many blankets have been ruined by such carelessness as dropping machine oil on the blanket while oiling the press, dropping wrenches and such foreign objects on the blanket during press adjustment. This article will deal with real problems and it is hoped that some good will be accomplished by its publication.

Rubber offset blankets are an expensive item in every lithographic pressroom and it would be well for every operator and pressman to treat the blanket with as much care and consideration as he would the press-plate.

A good rubber blanket is one that will receive the ink properly, is free from excessive stretch, and is uniform in thickness. When putting a new blanket on the press always make sure that the gripper and back edges are parallel and square with the sides. Uneven tension is often an unsuspected cause of trouble.

After the blanket has been tightened around the cylinder, it should be scrubbed with a piece of felt dipped in gasoline and pumice powder. This scrubbing will remove the top coating and expose the rubber beneath, leaving it ready to receive the ink impressions. When the press is set with the impression on, the rubber blanket will stretch and the back ratchet bars should be tightened after a few waste sheets have been run through the press.

It will often happen that due to poor lay, uneven packing, or other causes, there are uneven parts of the blanket which are too low to allow an impression to be taken from the press plate. In cases such as this, the blanket should be unfastened and the low areas packed with very thin tissue paper.

Another method of building up low spots in the blanket is to place a small amount of rubber solution on the low areas and then run the press with the impression on and put through a few waste sheets. The rubber solution hardens in the low spots and evens up the impression to a considerable extent. For very small spots, dents, or small holes, some operators put a drop of machine oil in the depression leaving it on overnight or during the lunch hour, causing the rubber to swell sufficiently to provide printing pressure. This method is not to be recommended as a regular procedure as it eventually will ruin the blanket.

Remember, the blanket manufacturer cannot be blamed for pulling a blanket too tight, or for the emboss-

ing or engraving effect that some blankets may receive from use.

The life of a rubber blanket may be shortened in numerous ways, such as by the fountain "dope," excessive washing with carbon bisulfide, gear-marks, excess of driers in the ink, kerosene in the ink as a reducer, and to much pressure.

Swollen Blankets

The swelling or rising of the blanket at the work areas may be caused by using improper or inferior varnishes which attack the rubber. The blanket used may be made of rubber that is too sensitive and thus it swells wherever it comes into contact with oils. Kerosene, magnesia, and similar substances should never be used to reduce inks; boiled oil will reduce as well and is not harmful to the rubber. Kerosene practically ruins the blanket by making it swell at the point of printing from constant contact.

Embossing or Engraving

Engraving, embossing, or indenting a blanket is due to the following: Piling of the ink on the blanket; too much water, in combination with inks not properly reduced; lint from the stock piling on the ink on the blanket; plates built up too high. An engraved blanket thus mistreated is usually ruined.

Tackiness

Tackiness in rubber blankets is one of the most common troubles encountered and results from combinations of troubles such as paper, ink, pressure, washing, etc. If you want good results first find a blanket that is least liable to become tacky and then use good common sense in the care of it.

It is never necessary to wash a blanket as often as it is usually done. Tint should be removed from the blanket with a damp sponge or cloth; excessive washing with any blanket wash usually makes the blanket tacky before it has seen much service.

The best friend of the rubber blanket at all times is "flowers of sulfur" or preferably precipitated sulfur. This should be rubbed into the rubber with the palm of the hand, using considerable pressure rather than just dusting it on, as is the usual practice. Should tackiness persist after this treatment, then use the following procedure: Dampen a cloth in plain water and rub it over the surface of the soaked blanket; while still wet, clean the blanket with a piece of felt soaked with gasoline and pumice powder, rubbing well until the shiny appearance disappears from the rubber; wash the pumice powder off with a clean cloth soaked in gasoline and follow up with

(Continued on page 59)

What's Ahead in the Lithographic Industry?

WITH equipment manufacturers unable to make deliveries at prices ordered, and with the small office-equipment manufacturer teaching letter-shops, printers, and even brokers, the fundamentals of the lithographic process, with a mushroom growth already well under way—with this condition obtaining all over the country—the lithographic industry would consider the question, "What's ahead?"

The depression days are over and we are now in a strong market. Advertisers are using a good portion of their budgets for lithographed products, 24-foot posters, displays, car-cards, maps, and direct mail. Let no one forget, however, that such a market builds up the employing lithographer to a point where he is vulnerable for more difficult times. In a strong market equipment is added, floor space is greatly increased, more employees are taken on, and under a shortage of help wages are increased to a marked degree. Even with additional working capital required, it is much easier to grow big than it is to cut down costs under a curtailed market. Because of the millions of dollars distributed during the past two years, business conditions in this country should continue strong for a year or two, but with its accompanying higher cost of living there eventually must be a reckoning, since multitudinous taxes and pensions systems of one kind or another contribute to build up an increased cost of every product. Therefore the lithographer should start now to provide today for what will take place tomorrow.

In this rapidly increasing industry we are faced with the problem of where we can get competent journeymen for the highly technical operations to be performed. Strippers, plate-makers, and pressmen must be trained. The far-seeing employer already has apprentices under his wing. It should be a duty and a pleasure to impart to the less experienced competitors the knowledge we possess, so long as information generously given will be honorably used. In this way the element of ignorance which does so much to demoralize the craft may be partially eliminated and one of the most dangerous factors of competition destroyed. Knowledge kindly imparted makes a business friend of one who would probably otherwise become a business foe.

Today we find employees being enticed away from one plant to another with the bait of higher wages. Because of the shortage of skilled mechanical help, some employees who are far from competent are moving from establishment to establishment, every time with a big jump in wages.

Every establishment should have a thorough knowledge of what it costs to produce the work it sends out, and should determine what percentage of profit it will be satisfied with. Based upon those two items, it should establish its prices for all work undertaken, whether secured by competitive bid or without a price being named in advance.

The good lithographer does not estimate on work that he cannot do, and when he is devoid of experience in certain branches of lithography, he should not attempt to price such work. It is always unsafe, and often unjust, to give prices upon a class of work for which the cost is not positively known and has to be guessed at.

Prices have been stabilized in some areas. Of course, prices are better where there is little or no competition. Lithographers are advertising minded. There is room, however, for much work in advertising and publicity. Every firm should distribute appropriate advertising material once a month. The life of trade is in the blood and in a healthy body its flow can not cease.

The Lithographic Technical Foundation has done a great deal of research. The officers and directors are to be congratulated on the grand work they have led. Professor Robert F. Reed and Dr. D. J. McDonald have shown a willingness to be spend without stint for this industry. Much good has come as a result of their work and with a loosening up of the exchequer a great deal more can be done. The many educational courses which the foundation has conducted cannot help but place a strong foundation under the lithographic industry. The new trade school to be opened in New York shortly will greatly further this work.

The lithographers of the country will sooner or later find it imperative to join a lithographic trade association. Problems affecting in a large way every lithographer loom large on the horizon. We may never have another NRA, but we will have some of its machinery back before many moons. Hours, wages, and working conditions play a big part in the cost of producing the lithographed product. Wages should be fair and hours sufficient to turn out the work, but any attempt to foist on the industry unreasonable conditions of any kind can best be handled by strong groups of lithographic establishments.

What's ahead for the lithographic industry? If one were to guess, he would easily see an industry with twice as many plants as there now are in the field, shortage of help which must be reckoned with, and an upward climb by the likely employee beginners to a point where they will take the place of inefficient present-day workmen. We are in a new day. The industry can keep step only if every lithographic plant will survey its own problems and move forward under a right code of ethics.

Reserve the three days, October 14th, 15th, and 16th, to attend the 1937 Convention of Photo-Lithographers at Hotel Carter, Cleveland.

Here is *the* Opportunity!

Tell your story to the cream of the Graphic Arts industries by reserving space in September Convention and Equipment Review Issue of THE PHOTO-LITHOGRAPHER.

Printers, lettershop owners, and photo-lithographers will gather in the following conventions in Cleveland, Ohio, October 10th to 16th:

United Typothetae of America
Direct Mail Advertising Association

Mail Advertising Service Association
National Association of Photo-Lithographers

These conventions, *all to be held in Cleveland during the same week*, should bring together the largest group of Graphic Arts employers that has ever assembled.

You can reach *every one* who attends *all of these conventions* with your sales message by representation in the Convention and Equipment Review issue of THE PHOTO-LITHOGRAPHER. With so many graphic arts establishments considering the photo-lithographic process, this issue of THE PHOTO-LITHOGRAPHER will be read thoroughly. Because it is lithographed 100%, it has a very real consumer acceptance in the lithographic industry.

The September issue of THE PHOTO-LITHOGRAPHER will carry editorial content which should further assure *reader interest*. Some of the papers we plan to carry in the issue are:

1. The Use of Paper, Film, Dry Plate, and Wet Plate Negatives.
2. The Size of a Lithographic Press from the Users' Viewpoint.
3. Selecting a Bond Paper for Combination Work.
4. Good Rollers Play an Important Part in Production.

5. Aluminum or Zinc Plates — What Determines the Choice?
6. Ink Problems of the Lithographer.
7. Determining the Choice of Equipment — Comments on Size, Ease of Operation, Cost of Operation, Service, Life of Asset Value, Reputation of Manufacturer and Price.

Equipment offered for sale to the lithographic industry will be shown in full halftone pages in this outstanding Equipment Review issue. You can use a second color, red or blue, and a bleed; and in addition to this, you can have preferred position provided you make space reservation early. Because of the Wire-O binding used, if desired, advertisers can supply their own lithographed inserts.

Advertising rates for the Convention Equipment Review issue of THE PHOTO-LITHOGRAPHER will be the same as for our regular issues. Distribution, of course, will be greatly increased. At our present low rates *you can increase your sales* by placing your story before the rich market which will be in Cleveland during the convention week.

Advertising Rates

Space	One Time
1 Page	\$95.00
1/2 Page	60.00
1/4 Page	35.00
Second color, red or blue, \$25.00 per page extra.	
Bleed Pages 15% extra per page.	
Reverse Plates: Add 10% to regular rates.	

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(Furnished by Advertiser)

Two Page Inserts . .	\$100.00
Four Page Inserts . .	150.00
Eight Page Inserts . .	250.00

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THE PHOTO-LITHOGRAPHER, 1776 Broadway, New York, N. Y.

LITHOGRAPHERS WIN TAXPAYER'S SUIT AGAINST CITY OF NEW YORK

THE Health Department of the City of New York recently sent out through the Dept. of Purchases bids for a book, "The Index Book of Vital Statistics." Both letterpress printers and lithographers entered bids on the job. The lithographers, however, were notified that no City work could be awarded them because they did not carry the union label of the Allied Printing Trades Council. This barred the lithographers from New York City work because they did not belong to the Council.

A number of lithographers operating in the New York area contributed to retain a counsel to bring a taxpayer's suit against the City for this discriminatory ruling. Benjamin M. Robinson was retained to bring an action in the Supreme Court. On May third, the Supreme Court handed down a decision which will enable the City of New York to save a substantial amount on the hundreds of thousands of dollars on printing its purchases for its various departments. The decision of the Supreme Court recognized the lithographic industry as an entity, and upheld the lithographic label against repeated attacks by other process unions in the Graphic Arts.

In his decision, Judge Rosenman said in part:

"There appear to be two recognized methods of producing such books: (1) the process known as Letterpress or Typographic Printing; and (2) the process known as Lithographic Printing. The proposals invited bids for each method; and stated that if an award were made for one method, there would be no award for the alternative method. The lowest bid received for the lithographic process was \$3,587.50. The lowest bid for the typographic process was \$6,272.00.

"The workers employed in the lithographic method of printing are organized in a union called The Lithographers of America. Those engaged in the typographic process, on the other hand, are organized in unions composing the Allied Printing Trades Council. There is, naturally, competition between the two classes of printing, with resultant friction between the respective unions.

"The plaintiff seeks to enjoin by this motion (1) the proposed award for the index books by the letterpress method on the ground that it will not be to the lowest bidder, and (2) insistence by the City upon compliance with the foregoing resolution with respect to the label in its future proposals for bids for printing.

"The City of New York is justified in its demand that the materials and supplies sold to it by contractors be manufactured by union labor. Such authorities in this state as may be urged to hold the contrary, like *Davenport vs. Walker* (57 App. Div., 221 (3d Dept., 1901) and

People ex rel. Single Paper Co., Lim., v. Edgcomb (112 App. Div., 604 (4th Dept., 1906), will not be deemed controlling.

"Much progress has been made in economic thinking since the time of those decisions. Even though the immediate cost in dollars and cents to the City may be higher than the cost of sweatshop products, we have now come to recognize the greater ultimate cost to the people as a whole, which results from low wages, overlong hours and unsanitary working conditions. The presence of the union label may reasonably be considered as an assurance that the products have been manufactured under conditions in accord with our present-day social consciousness. In these days, when much of the effort of government is directed towards securing decent standards of pay and work for labor, not only by direct legislation, but also by legislation protecting the right of collective bargaining, it would certainly be strange to say that the City or state itself may not insist that its own products be made according to fair standards.

"The Amalgamated Lithographers of America, so far as the record here discloses, is a bona fide, recognized labor union. It is affiliated with the American Federation of Labor, the New York State Federation of Labor, the New York Trades and Label Council of New York City, and the Union Label Trades Council of New York City. There is nothing to cast doubt on its bona fides as a union or on the effectiveness of its activities in behalf of its members. Under such circumstances the city has no right to insist upon the presence of the label of the Allied Printing Trades Council, whose members are engaged in letterpress printing, in preference to the label of the Amalgamated Lithographers of America, whose members are engaged in lithographic printing. In the competition between these two types of printing—lithographic and letterpress—the city cannot under the guise of selecting the label of the union in one exclude the other. Therefore, the continuance of the requirement that all printed matter purchased by the city bear the label of the Allied Printing Trades Council will be enjoined.

"A different conclusion might be reached if it could be shown that the union excluded was not in fact a bona fide labor union organized solely for the benefit of the workers in the industry."

One thing is very evident from this experience: In unity there is strength. Certainly no single lithographer could have carried such an action to a successful conclusion. From the wording of the judge's decision itself, one can see the advantage of banding together in strong trade associations for the good of the industry.



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25 x 38	100	120	140	160	200	240	300
28 x 42		148	174	198	248	298	
28 x 44		156	182	208	260	312	
32 x 44		178	208	238	296	356	
35 x 45	166	198	232	266	332	398	498
36 x 48	180	220	256	292	400	480	600
38 x 50	200	240	280	320	466	560	
41 x 54		280	326	372	476	592	712
44 x 64		356	416	476			

INDIA WOVE

25 x 38	120	140	160	200
35 x 45	198	232	266	332
38 x 50	240	280	320	400

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Aluminum Rollers

WHEN two dissimilar metals come in contact with each other in the presence of moisture, electrolytic action generally sets in. If the character of the metals and the nature of the moisture is such that an appreciable amount of current is caused to flow, one of the metals is definitely attacked and weakened. Where, in the manufacture of machinery, this contact is unavoidable, care must be taken that the two metals are not too inimical to each other if it is desired that the equipment should enjoy a reasonable length of life and perform its function properly.

A good example of the use of various metals is to be found in offset lithographic presses where brass, zinc, steel and other materials combine to produce efficient machinery. Aluminum, in addition to being used in the manufacture of intermediate dampening rollers because of its light weight, is preferred because the galvanic action between it and the zinc or aluminum lithographic plate is so slight as to be negligible.

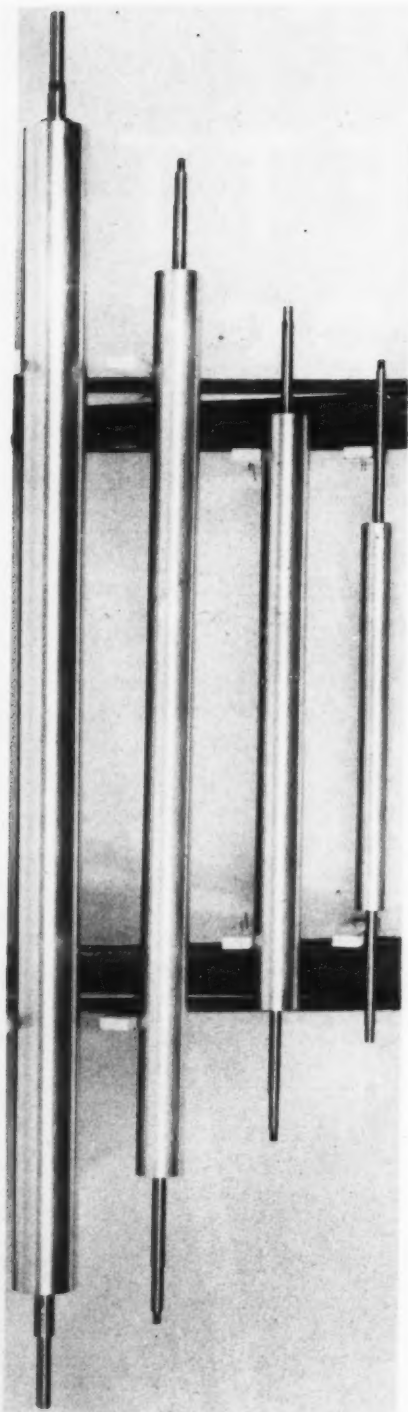
The intermediate roller is the third in the series of rollers from the water-pan to the lithographic plate. A muslin-covered brass roller picks up the water from the pan and transfers it to a ductor-roller which in turn deposits the water on the intermediate roller. The latter runs in contact with two molleton covered rollers which are tangent to the lithographic plate cylinder and serve to deposit a small amount of moisture on the plate.

Thus both the lithographic plate and the intermediate roller are in contact with the dampening rollers. Both are likewise in contact with the metallic frame of the press, thus forming a conducting circuit.

Corrosive action on metal rollers results in a roughening or chemical change of the surface of the roller. This in turn causes the roller to pick up particles of ink which have adhered to the molleton rollers as they run in contact with the lithographic plate. The accumulation of these particles of ink on the intermediate roller causes it to carry an uneven film of water, resulting in uneven dampening of the plate and an increased tendency for the molleton covered rollers to pick up ink.

When using an aluminum intermediate roller the corrosive action is negligible, and the roller tends to remain clean and to carry a uniform film of water. Thus a uniform supply of water is evenly distributed on the molleton rollers and the plate and there is less tendency for the molleton rollers to pick up ink from the plate. Uniform dampening of the plate also tends to prevent the latter from gathering scum on long runs. Since the press does not have to be stopped as frequently for removing scum from the plate or for cleaning the rollers, more impressions may be obtained from the plate and the press may be operated for longer periods of time without being brought to a stop.

The Harris-Seybold-Potter Company of Cleveland is a prominent user of aluminum rollers of this type on offset presses. One aluminum roller is used for each printing unit. Its diameter varies from $2\frac{1}{4}$ inches to 4 inches and its length depends on the width of the machine on which it is used. The Harris products run from 17 x 22 single-color offset presses to $46\frac{1}{2}$ to $68\frac{1}{2}$ four-color presses. The roller is made of an aluminum-magnesium-silicon alloy.



Four representative sizes of aluminum rollers. The smallest is $2\frac{1}{4}$ inches in diameter 25 inches long; the largest is 4 inches in diameter and 71 inches long.

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Fundamentals of Photography as Applied to Lithography

John McMaster, Eastman Kodak Company

INTRODUCTION

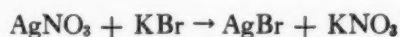
IT is only natural that in consideration of the subject of photo-lithography, we take up the photographic process first. Not only will this give us a detailed study of the technique of photography itself, but it will also show the important part that photography plays in the whole lithographic process.

In the early days when the lithographer's stone and the hand transfer were being replaced, the collodion wet plate was the chief reason for the change and was the photographic medium most in use. But now shortly we may expect the demise of wet plate methods. For this reason we shall confine this discussion to dry plates and dry plate methods.

THE PHOTOGRAPHIC EMULSION

There are a considerable number of chemical compounds which are sensitive to light and each one has its characteristics which makes it more or less suitable for a particular photographic purpose. However, those light sensitive materials which are of particular interest to us in photo-lithography are the silver halides and the bichromated colloids. The former group is represented by silver bromide, iodide and chloride and the latter by bichromated gelatin, glue, albumin, shellac and gum arabic.

The ordinary dry plate material consists chiefly of a silver halide, such as silver bromide, suspended in gelatin which has been coated on a smooth support. The support may be of glass, film base or paper. The silver bromide has been formed as a precipitate in gelatin from the reaction between silver nitrate and potassium bromide.



Gelatin is obtained from the hides and bones of animals. It has some peculiar properties which are especially valuable in photographic work. It does not dissolve in cold water but will expand; in hot water it dissolves to an almost unlimited extent. As more gelatin is added the solution simply becomes more viscous instead of crystallizing out as in the case of dissolved salts. Upon cooling, the gelatin will set to a jelly. It can be melted by applying heat and reset again on cooling many times.

The ability of gelatin to swell in water permits the penetration of processing solutions as we shall

see later. On drying it shrinks back to form a brittle, horny layer, on the original support. Fortunately the direction of the swelling is away from the base and not along it so that there is no distortion of the image.

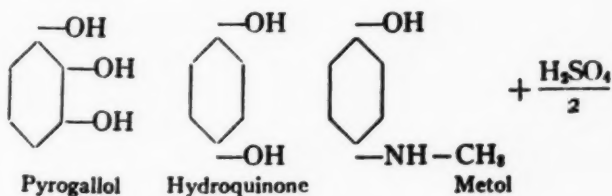
CHEMISTRY OF THE PHOTOGRAPHIC PROCESS

Just what takes place when a grain of silver bromide is struck by light is not known. Certain it is that some change takes place which makes the grain developable; in other words it will react with compounds which will change it to metallic silver. The image formed in the emulsion on exposure to light but before development is latent and we have occasion to speak of the latent image.

The most recent theory of latent image formation assumes the action of light to cause the bromine in the silver bromide grain to lose an electron which is absorbed by a silver ion to form metallic silver. Provided it is of sufficient size this deposit of silver particles on the surface of the silver halide grain together with the presence of sensitizing nuclei of silver sulfide (formed in the reaction between silver bromide and sulfur in the gelatin) determines the developability of the grain.

Once the latent image has been formed in the emulsion by exposure to light, it is then necessary to find a compound which will reduce the exposed silver halide to black metallic silver (in other words a "developer") and subsequently one to dissolve out the unexposed halide (to "fix").

Experimentation has acquainted us with a number of compounds which have this ability to reduce exposed silver bromide to silver and to leave unaffected, at least for a certain period during development, the unexposed halide. These reducers are chiefly organic in chemical formation, they have no particular chemical relation to each other and work best in alkaline solution. Three of the well-known reducers are



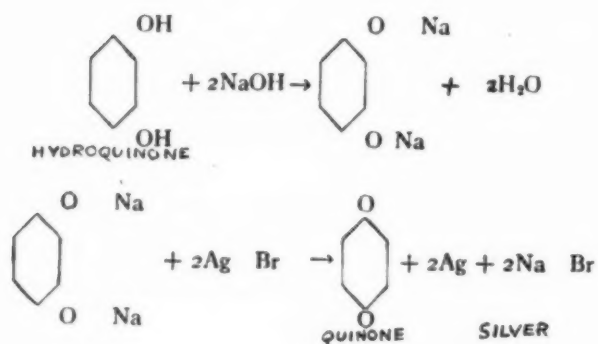
These reducers function only in alkaline solution so that it is necessary to add an alkali such as sodium carbonate or sodium hydroxide. Within certain limits the amount of this compound added controls the rate of development.

It is the usual practice to add sodium sulfite to the developing agent to prevent oxidation but just what action takes place is not known. It is likely that the sulfite reacts with the reducer to form a compound which is more resistant to oxidation than either by itself.

It is also customary to add a certain amount of bromide as a restrainer. Potassium bromide, for instance, has the effect of diminishing the degree of ionization of the silver bromide and in this manner, the rate of development is lowered. Without the presence of such a restrainer, many reducers would have a tendency to convert unexposed grains of silver bromide to silver before development of the exposed grains had been completed. In other words fog would set in.

We have just observed therefore that most developing solutions are made up of four constituents, the reducer or developing agent, the accelerator or alkali, the preservative or sulfite and the restrainer or bromide. For purposes of aiding the memory, these components may be listed in the form of a mnemonic such as suggested by the letters R - A - S - B, representing respectively the various parts of the developer just described.

As indicated previously the reactions of the developing operation are not fully understood. Research indicates that in the case of hydroquinone without sulfite, however, the following takes place:



Metol and hydroquinone are constituents of many developers, usually together, although the hydro-

quinone is sometimes used alone. In general, most soft working developers such as used in continuous tone work contain both of these reducing agents while in process work, either both or hydroquinone alone are found. With metol the image comes up very quickly but develops to a low contrast, while the hydroquinone image appears very slowly but results in high contrast.

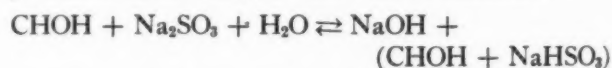
Of special interest to process workers is the behaviour of the well known high contrast developer, D85, used with Kodalith emulsions. Here again the functions of the various constituents are not fully understood. The formula is as follows:

DEVELOPER (Formula D-85)

	<i>Avoirdupois</i>	<i>Metric</i>
Water (about 90° F.) (32° C.).....	64 ounces	2.0 liters
Sodium Sulphite, desiccated (E. K. Co.).....	4 ounces	120.0 grams
Paraformaldehyde.....	1 ounce	30.0 grams
Potassium Metabisulphite.....	150 grains	10.5 grams
*Boric Acid, crystals.....	1 ounce	30.0 grams
Hydroquinone.....	3 ounces	90.0 grams
Potassium Bromide.....	90 grains	6.3 grams
Water to make.....	1 gallon	4.0 liters

Examination of the formula fails to disclose the presence of an alkali such as sodium carbonate or sodium hydroxide. That an alkali is formed however is apparent from the following considerations. When paraformaldehyde is dissolved in water containing sulfite it immediately depolymerizes to formaldehyde.

The formaldehyde then in turn reacts with sodium sulfite to form sodium hydroxide and an inert compound of formaldehyde and sodium bisulfite:



The potassium metabisulfite appears to aid in dissolving the paraformaldehyde while the boric acid acts as a buffer, maintaining the pH of the developer.

In development during the first 30 to 45 seconds, an image of low contrast appears where the emulsion has been exposed. Thereafter a secondary development takes place which produces an image of extreme contrast. The reaction appears to be a combination of development and intensification.

There are only a few compounds capable of dissolving the unexposed silver halide. Of these sodium thiosulfate is most generally used. Its action on silver bromide may possibly be represented by the following equations which indicate the removal of the bromine as soluble sodium bromide and the silver as a complex soluble double salt:



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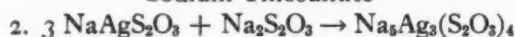
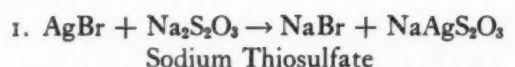
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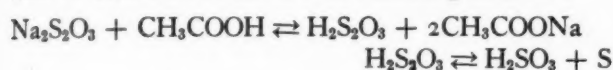
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The end products are of course removed in the washing operation.

It is readily seen that when the photographic material is removed from the developer and placed in the hypo bath, a considerable amount of the developing solution is carried over which would have a tendency to stain negatives and prints. This condition may be prevented by immersing the negative or positive in a weak solution of ascorbic acid before placing in the fixing bath. Earlier attempts to combine this ascorbic acid bath with the hypsolution resulted in a precipitation of the sulfur and the formation of sodium sulfite in the following manner:



The addition of a quantity of sodium sulfite beforehand tends to throw the reaction to the left and therefore to prevent the decomposition of the sodium thiosulfate.

Swelling and softening of the gelatin is prevented by the presence of a hardening agent such as potassium alum in the fixing bath.

We see therefore that a suitable fixing bath will consist of the silver halide solvent such as hypo, acetic acid, sulfite and hardener. The range of acidities over which the bath will work satisfactorily is somewhat limited unless a small amount of boric acid is added. In recent years it has been the custom to add this compound which acts as a buffer and maintains the pH of the solution. The constituents of the fixing bath just described are used in formula F₅ which is recommended for Kodalith materials.

Most process developing solutions such as D-8₅ and D-8 are strongly alkaline so that if the negative or positive were immersed in the fixing bath without rinsing, the latter solution would be attacked by the alkaline developer and deteriorate rapidly. It is therefore advisable to introduce an acetic acid rinse between development and fixation.

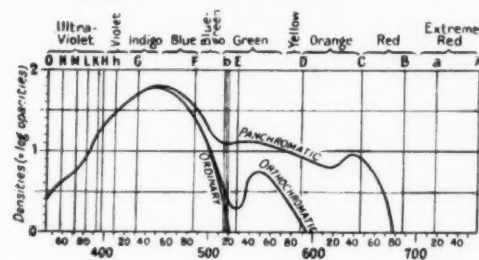
After fixation, the photographic material must be thoroughly washed in water to expel the products of the fixing bath, especially the complex thiosulfate of sodium and silver.

Drying, the final operation, may take place in a gentle current of dry, dust-free air.

COLOR SENSITIVITY AND THE USE OF FILTERS

In process photography we have to deal chiefly

with visible light, or that part of the spectrum which is represented by this curve



The figures refer to the wave-length of light expressed in mille-microns. For instance blue light could be represented by a curve having a maximum in the neighborhood of 450 μ green light at 550 μ and red at 650 μ . Ultra violet and infra red light are invisible and are found at either end of the curve illustrated above.

The ordinary photographic material is sensitive to only blue and ultra violet light. It can be made sensitive to green light also by the addition of certain sensitizing dyes to the emulsion and it is then said to be orthochromatic. Certain other dyes will sensitize the emulsion to red light as well as blue and green and the emulsion is designated as panchromatic. The spectrum curve which we have just drawn will represent then the sensitivity of a panchromatic material when it is exposed to light sources of those various wave-lengths.

By placing filters over either the light source or the lens it is possible to utilize any portion of the spectrum desired. This characteristic of panchromatic materials is taken advantage of in color photography and in the rendering of color contrasts for special purposes. Color photography is a separate subject in itself and will not be dealt with here.

The orthochromatic feature of many of the high contrast emulsions is of special advantage in black and white work where yellow copy is encountered. The sensitivity of the emulsion in the yellow region permits it to react to the background of yellow copy and produce good rich blacks in the negative.

PHOTOGRAPHIC SENSITOMETRY

The behavior of all sorts of chemical compounds when subjected to certain stimuli can be represented by curves of one type or another. This is none the less true of photographic emulsions and a world of information can be gathered by studying the curves obtained by plotting the density against the exposure. This characteristic curve is the chief item of interest in the subject of photographic sensitometry.

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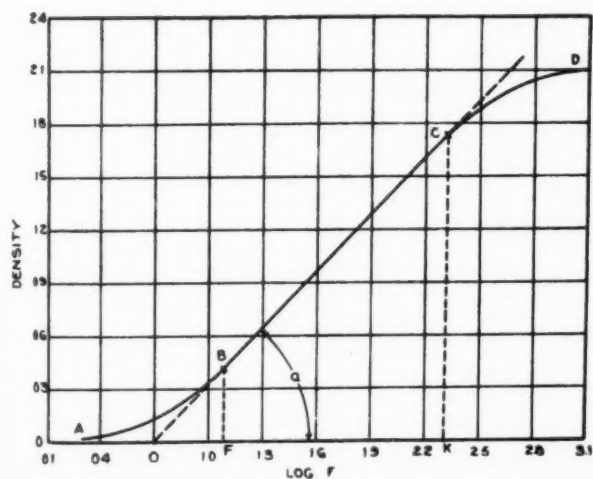
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It might be well to clarify the factors which go to make up exposure. Exposure is defined as the product of the intensity of the light falling on the photographic emulsion and the time during which the light acts. As long as the product remains the same, the reciprocity law states that it is possible to vary either intensity or time. Within certain limits, the reciprocity law holds on most photographic emulsions. When extreme variations are introduced with these two factors, however, there is likely to be a failure of the reciprocity law so that the equation E equals IT no longer holds.

If we were to subject a photographic emulsion to a series of exposures such as in photographing a gray scale, develop and fix, the resulting negative would show a series of silver deposits or densities corresponding to the original steps in the original scale. To determine how the emulsion has reacted to these exposures it is then possible to plot the densities produced against the exposures given. In practice the logarithm of the exposure is plotted as the abscissa against the density which is the logarithm of the opacity or the logarithm of the reciprocal of the transmission of the silver deposit, as the ordinate. Densities are conveniently measured on an instrument known as a densitometer. For a continuous tone material the curve may look like the following:

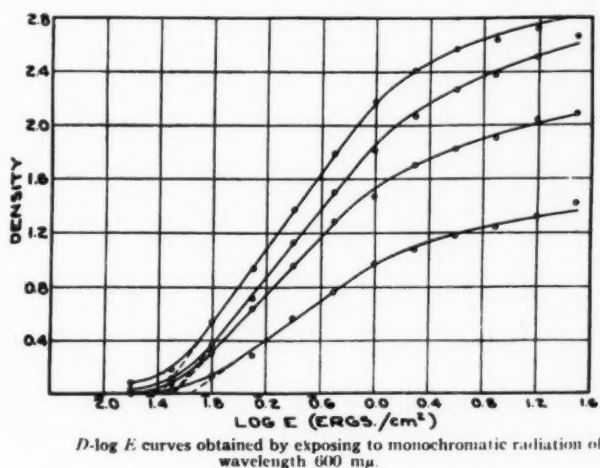


Typical D -log E curve of a photographic material.

It is to be noted that a considerable portion of the curve is represented by a straight line. Densities falling on the straight line portion produce correct reproduction since there is an equal change in

density for a corresponding change in Log exposure. Where the emulsion is subjected to small amounts of light stimuli as at the "toe" of the curve, the densities are compressed and this is said to be the region of under-exposure. Likewise at the other end of the curve, the region of over-exposure produces a "shoulder" where the densities are also compressed. Needless to say, in making a reproduction on any emulsion, exposures should be such that the developed densities will fall on the straight line portion. This means that on the ordinary continuous tone material all densities would fall between about .3 as a minimum and about 2.5 as a maximum.

In addition to the density range of the straight line portion, it is also possible to learn something about contrast. If a series of different developments are given to the same emulsion, the densities which are reproduced can be illustrated by the following curves:



D -log E curves obtained by exposing to monochromatic radiation of wavelength 600 mμ.

It can easily be seen that as development proceeds the straight line portion assumes a steeper angle. This condition indicates an increase in contrast or "gamma." Numerically, gamma is defined as the tangent of the angle produced by the intersection of the straight line portion of the curve with the Log E axis.

PHOTOGRAPHIC MATERIALS FOR PROCESS WORK

With scarcely any exception, materials used in the general run of commercial and portrait photography are suitable for continuous tone work in process photography. This means that the characteristic



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curve should show a considerable straight-line portion and that the maximum density should be around 2.5.

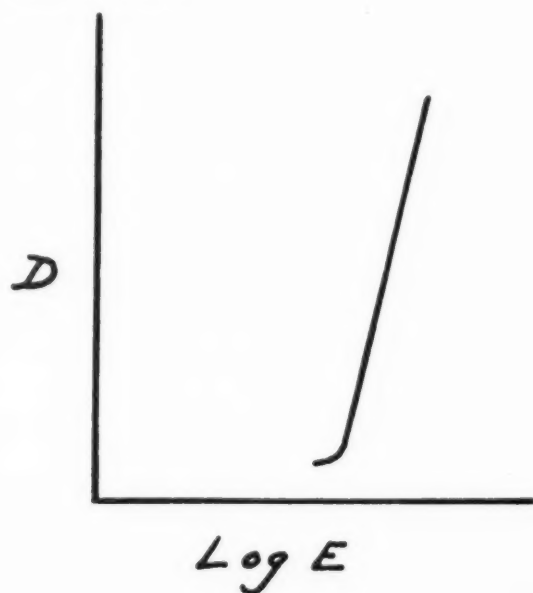
In the case of a material used in making line and halftone negatives, the requirements are quite different. Here the image should show extreme contrast, that is, it should have a very high gamma with a corresponding high density. The characteristic curve should show little or no toe.

Process materials of this type should have anti-halation backing unless, of course, the materials are intended to be exposed through the base in order to obtain a reversal of rights and lefts in the image.

In most emulsions of this type, the grain of the black silver image is very fine. The emulsion itself is said to have very high resolving power, that is, it has the ability of reproducing very fine lines with the maximum amount of definition.

It is also advisable to have materials of this type orthochromatic in sensitivity. This is of considerable advantage in reproducing yellow copy.

In the case of process material intended for the making of line and halftone negatives, the curve should show extreme contrasts, and may be represented as follows:



Most emulsions of this type are thinly coated so that they fix and dry quickly. Speed of emulsion is of no particular consideration as long as it matches fairly well this characteristic of the wet plate. Better control is exercised in the making of both line and halftone negatives if exposures will run from 20 seconds upwards to 3 or 4 minutes.

Some of the early dry plate materials were produced on paper base. Such a support is usually satisfactory if maintenance of exact size is of no consideration. If it is necessary to produce the same size or near same size of dimensions, film support is to be recommended. If the operator is having any difficulty with exact register, then glass plates are to be recommended. This is especially true for the larger sizes of negatives. Nevertheless, satisfactory negatives of considerable size may be made on film if the various negatives are treated alike in development, fixation, and washing and are dried slowly and uniformly without the use of undue heat, so as to avoid unequal shrinkage of the support. This, of course, is an important consideration in color photography.

Further requirements of process materials depend on the uses to which they are put. Panchromatic emulsions, of course, are essential for color photography and for rendering contrasts when working with colored copy. Extensive use has been found for infra-red plates in connection with the black printing plate in four-color photography. Emulsions suitable for dot etching furthermore have characteristics which are slightly different from those used in the regular run of halftone work.

THE PROCESS CAMERA AND DARK ROOM

In general, there are two types of process cameras: the gallery type, which is set up near but not attached to the dark room, and the dark room type, which, as the name indicates, refers to the back portion extending into the dark room to facilitate loading. Each type has its advantages, although at the present time there seems to be a definite trend toward the use of the dark room camera.

With this equipment there is a considerable saving in time in loading the camera, since all the controls for moving the copyboard and the front of the camera are located in the dark room. The operator need only leave the dark room to change the copy or make the exposure.

For most types of process work an apochromatic lens should be used. Not only will such a lens give excellent definition at all points in the focal plane but it will also give the right amount of correction for color work. It may be equipped with either an iris diaphragm or a slot into which Waterhouse or other types of stops may be inserted.

In most process work white flame arcs are used for the illumination of the copyboard. There has been a growing tendency to attach these lights right to



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the copyboard itself so that the amount of illumination falling on the board is always constant. Lamps of this type have been manufactured so that when the copyboard is tilted to change the copy the lamps drop out of position and go out. When the board is placed into position, the lamps swing into place and go on. The copy may be tacked up on the board, it may be held up by suction, or it may be covered with a sheet of high-grade plate glass. It is essential, of course, that the glass be cleaned of all specks which might show up in the negative.

It is common practice to load film and strip film holders into what is known as a negative stayflat holder. This is a sheet of aluminum or glass, coated with a tacky gelatin solution, which fits into the same position in the back of a camera occupied by the wet plate. Other backs are made in which a stayflat holder is a part and which is hinged at the bottom so that the film may be loaded in a horizontal position. Before exposing, of course, it is tilted into a vertical position in the focal plane. Some cameras are equipped with suction backs. It is possible also to hold film materials flat between two sheets of glass, although this method is to be discouraged because of the excessive amount of pinholes which might result from dust accumulating on the front glass. Where the stayflat negative is an integral part of the back of the camera and where the suction back is used, the camera must be the dark room type.

The dark room should be large enough to give the operator the necessary freedom of movement and should be properly illuminated and ventilated. The sink should be large enough to take four trays, each one representing the maximum size of the negative to be made in the camera. These trays, of course, would be used respectively for development, rinsing, fixing, and washing.

It is not advisable to use a darkroom for both wet and dry plate materials. The solutions used in one process might easily contaminate solutions used in the other.

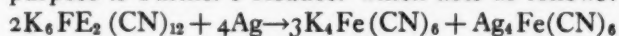
THE MAKING OF LINE AND HALFTONE NEGATIVES

Given a lens of good definition and covering power, there is no particular difficulty involved in making a line negative. Focusing may be accomplished by scales built on the camera and checked on the ground glass. It is essential, of course, that the ground side be in the same focal plane as the emulsion.

With practically all photographic materials, developing instructions are provided by the manufacturer. It remains therefore for the camera operator

to give an exposure which will permit development under the recommended conditions. In this way best results are insured.

After development and fixation, some operators prefer to use a "clearing" solution which in effect reduces the density of the silver deposit. In this manner some of the fine lines may be sharpened up and fuzz removed. An excellent solution for this purpose is Farmer's Reducer which acts as follows:



Potassium Ferricyanide Silver Ferrocyanide

The silver ferrocyanide is then dissolved out in sodium thiosulfate or so-called hypo.

In planographic printing, gradations of tone are obtained by solid dots of varying size. When the reproduction is viewed by the naked eye at a distance, the dots are integrated as a whole so that an effect of continuous tone is produced. This breaking up of the original image into halftone dots is accomplished by means of the halftone screen placed in front of the light sensitive material.

In the manufacture of halftone screens, two sheets of glass are coated with a varnish resist. A diamond tool is then used to cut parallel lines in the two sheets of glass so that when they are superimposed face to face, the lines will cross at an angle of 90°. After cutting, the lines are etched with hydrofluoric acid. The etched lines are then filled in with fine graphite and the faces of the two glasses are cemented together with Canada balsam. The edges are sealed with aluminum. The width of the lines is the same as that of the space between them.

The distance between the halftone screen and the photographic material has an important bearing on the quality of the negative and the determination of this distance depends on a number of factors. The diameter of the stop, the amount of camera extension and the diameter of the screen ruling all have a profound influence in determining the correct screen distance. The ratio of camera extension to stop diameter equals the ratio of screen distance to screen opening. Many persons have found Fruwirth's diffraction formula to work out satisfactorily, a practical application of which states that the ratio of screen distance to screen opening is approximately 32 for 200 line screens, 64 for 133, 150 and 175 line screens and 90 for the coarser screens. Several systems such as the Douthitt and Kinzler are on the market for automatically setting the correct screen distance for all ordinary conditions of halftone negative making.

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THE PHOTO-LITHOGRAPHER

Selecting Ink Supplies

THE lithographer should seriously consider his suppliers of printing accessories. A careful study of paper stocks, inks and the like will reveal many differences that might be overlooked otherwise. Inks embody many factors that are not readily recognized and unless the supplier is dependable and reputable the lithographer is liable to a series of unhappy experiences.

There can be no doubt that years of ink experience will place a premium on the products of an established ink-house. Many claims are made for experience in ink-making, but as we all know, time is the greatest teacher. The solutions for the daily problems that confront the lithographer can only be intelligently answered by the experience that comes with the years of such special endeavors.

Many ink-makers produce various types of ink, but the ink-house that specializes in lithographic inks is the one that can best meet the lithographers' requirements. Lithographic inks differ radically from the inks employed by other processes. To get the best results, it is essential that pigments, varnishes, compounds, and driers be compounded in such a manner that the resultant inks will be compatible with the special needs of the lithographic process. Resistance to water and acid, freedom from piling and caking, and freedom from plate oxidation are but a few of the factors the lithographic-ink specialist always considers when making inks for the lithographer.

The lithographer must also be assured that every lot of ink received is identical in every respect. A complete system of control over all the ingredients of which lithographic inks are composed can only be maintained where the pigments, varnishes, etc. are actually produced under the same roof. The lithographic ink-maker knows just what is required of his pigments, his varnishes, and his compounds. His demands are related to the various units and they, in turn, are reflected in the products being made so that they should conform to the lithographers' needs. Organizations such as this can be depended upon to supply lithographic inks of unusual uniformity.

Frequently it becomes necessary for the lithographer to produce effects that call for special inks. The ink-maker should be in a position to use his talents in such endeavors. Experience in the solution of

similar lithographic problems lends its aid and, as is the case in most such specialties, the qualified lithographic ink-maker can always be counted upon for the best results.

If the lithographer is to keep his presses running, he must insist on rapid ink deliveries. Such deliveries must be made regardless of time or weather. Services of this nature, even though they appear unreasonable, must be assured if the lithographer is to give prompt deliveries to his customers.

The ink supplier should be in a position to serve the lithographer on all the unusual problems. New stocks require special treatment and, in most cases, special inks. The ink-maker should be able to give the lithographer inks that will withstand extraordinary conditions where such are demanded. New developments in lithographic inks, whether they are reflected in pigments, vehicles, or even in driers, can be expected of the established lithographic ink-maker.

One of the most important factors that the lithographer must consider is the quality of the inks he is using. Many pigments that go into ink are subject to variations that cannot be detected by casual observation. The lithographer is, in most cases, not equipped to make analysis of his inks. He need not worry if his inks come from a house of long-standing reputation. The same is true of the varnishes that are used in ink-making. The established ink-house will not employ varnishes that are not up to the standards set. Its guarantee for the uniformity of its pigments, varnishes, driers, and compounds should relieve the lithographer from any grievance.

The last and most important factor the lithographer must consider is the cost of the ink he is using. Unfortunately, too much emphasis is placed on this phase of ink buying. The total cost, in the final analysis, is the determining element. Many times figures have proven that cheap inks are costly. The lithographer must determine just what he expects to get out of his inks. If he expects good coverage or good mileage he must realize that these cannot be obtained with cheap inks loaded with filler. If good permanency is expected, if special qualities are demanded, if he desires good working inks that give the greatest satisfaction with the least effort, he can get all this by selecting an ink-supplier with an established reputation.

It's too late to hire Paul Revere —but we're anxious to spread this message!



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The man who pays the roller bills also has had something to say, with the result that rollers from Ideal are most economical, not only in cost but in time-saving operation. The high quality of work, the perfect water-control and the full color throughout the run which are possible with Ideal Rollers are important factors in gaining and in holding satisfied customers.



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Rollers for Photo-Lithography

MANY letter-press printers are entering the offset field for the first time through installation of photo-lithographic equipment because it appears to afford the greatest opportunity at the least expense.

There are, of course, many seasoned lithographers in the photo-lithographic business. To them the following remarks on rollers and blankets will appear as purely elemental for they have long ago met and solved the difficulties mentioned. But the man whose experience has been obtained in the letter-press field may encounter some trouble in changing from one process to the other.

An understanding of the fundamental differences in the two processes may assist in avoiding the more obvious difficulties.

The introduction of water to repel inks is, of course, quite foreign to the letter-press work. Likewise, the use of a blanket for offsetting the ink from the film plates introduces an additional agent not present in letter-press printing.

Relaying Ink from Fountain to Paper

Ink must be handled so as to provide not only its proper distribution but also its forward progress through a succession of increased affinities to the paper itself. This progress or movement can best be typified as a relay race, where one agent delivers a product (ink) to another agent who carries it on to the next—until the course has been run.

The proper arrangement necessary to control the amount of water employed and proper distribution necessitates first—rollers.

Because of the water used to repel inks in offset work, an entirely different type of roller is required than that used in letter-press printing.

Such rollers must have only sufficient affinity for the ink to carry the correct amount of it to the plate surface. The roller's affinity for ink must be less than that of the plates, for the plates constitute the second agent in the relay, they having been properly treated to accept the film of ink from the rollers.

The third agent in relaying ink from the fountain to the paper is the blanket, which must necessarily have a greater affinity for the ink than the plates which preceded it. From the blanket the ink is picked up by the paper, which we know to have a

greater affinity for ink than any of the preceding agents.

Improper Relaying Agents

You can readily see that, should materials be used that have a greater affinity for ink than have the plates, trouble will ensue. In other words, there will be a pull-back of ink, resulting in a mottled effect where heavy coverage and solids are predominant. Where light coverage is desired, any excess water on the plate will be pulled back into the ink and result in graying and loss of proper water distribution on the press.

By analysis you may see, for example, that this condition will result should rubber rollers be used which have an exceptionally decided affinity for the ink used.

For proper relaying of ink, it is necessary to have rollers thoroughly clean at all times. There are various makes of photo-lithographic rollers available; some clean readily, and others are extremely difficult to keep clean.

Most reputable roller manufacturers enclose proper instructions for keeping their rollers in condition and these instructions should be followed to the letter. This not only gives the results desired but also enables the user to obtain longer life from the rollers.

Another important point in regard to rollers—particularly the form rollers, although in this respect it is well to follow the same procedure with all the rollers on the press—is that the rollers must be set to a very light contact. Heavy setting results in poor work, in addition to soon destroying the roller and also causing excessive wear on the plates, should the rollers happen to be form rollers.

Roller Difficulties

The importance of rollers in photo-lithography, as well as in offset, may be brought more forcibly to your attention by pointing out a few of the difficulties that may be caused either by the rollers themselves or by the method of handling. Many of these difficulties can also be caused by improperly prepared plates or by other numerous causes in addition to rollers, but in the following section these difficulties are considered from the roller standpoint alone, with suggestions for overcoming them.

**Plan to attend the Photo-Lithographic Convention
Hotel Carter, Cleveland, Ohio, October 14, 15, 16.**

Roller Troubles

FIRST—*Scumming*

Dirty dampeners or improperly set inking-rollers.

SECOND—*Work thickening or soon graining up*

Inking-rollers or dampeners improperly set.

THIRD—*Plate appears too moist, yet it dries in spots.*

Improper setting of dampers.

FOURTH—*Mottling of solids.*

Rollers have too much tack or offset for ink.

FIFTH—*Graining soon after press has been shut down.*

Inability of the type of roller being used to help control water.

These are but a few of the troubles that may be encountered if proper rollers are not used or if they are not handled correctly.

Each newcomer to the lithographic field should insist that at least the form-rollers be resilient and parallel (except in cases of extreme length where a slight crown may be necessary). Rollers must be free from low spots and made of a material that will properly handle and distribute ink. Insistence upon these roller requirements will help every such newcomer and obviate at least a portion of the possible troubles that usually confront any one not thoroughly familiar with the highly specialized field of offset.

Importance of Blankets

A proper offset blanket is just as important in the production of satisfactory results as are the rollers. Blankets are made of rubber or synthetic rubber and have a definite affinity for picking up the film of ink from the plate. For many years practically all of the rubber blankets used on offset presses were imported from Europe. But at the present time there are five or six domestic manufacturers who are now producing a majority of the blankets used in the United States. These have been developed only after a great, and sometimes discouraging, amount of research and development work. The result is that our manufacturers produce blankets not only as good as those imported—but in most cases better.

For those not familiar with how blankets are made, it may be of interest to know that the base, and hence the strength, of a blanket depends upon the proper selection of the highest-grade fabrics available. This fabric must be so treated as to eliminate every possible bit of stretch in the direction that the blanket is applied around the press cylinder.

Blankets are built up by the process of spreading over the fabric, layer by layer, a very thin solution of rubber or synthetic rubber material dissolved in a suitable solvent until the proper thickness is obtained. A three-ply blanket indicates that it is made of three layers of fabric. The layers of rubber are only a fraction of a thousandth thick and in order to obtain a surface free from blemishes, blankets must be made in a dust-proof room. A minute particle of dust will cause a blemish.

Blankets are made in several degrees of hardness and often the lithographer will experience some difficulty by trying to use one hardness of blanket for all types of work and runs. He should not expect one hardness of blankets to take care of all his requirements, any more than he would expect an automobile tire to give satisfactory service on his pleasure car and yet stand up under the heavy, grueling loads carried by a truck.

A soft blanket should be chosen where the runs are short and where the lithographer desires work to print correctly as soon as possible after the start of the run. Unlike the harder grades, soft blankets require little or no breaking in, but have a greater tendency to emboss, and unless they have the opportunity to get a rest from operations at frequent intervals, they will not last as long as a harder grade.

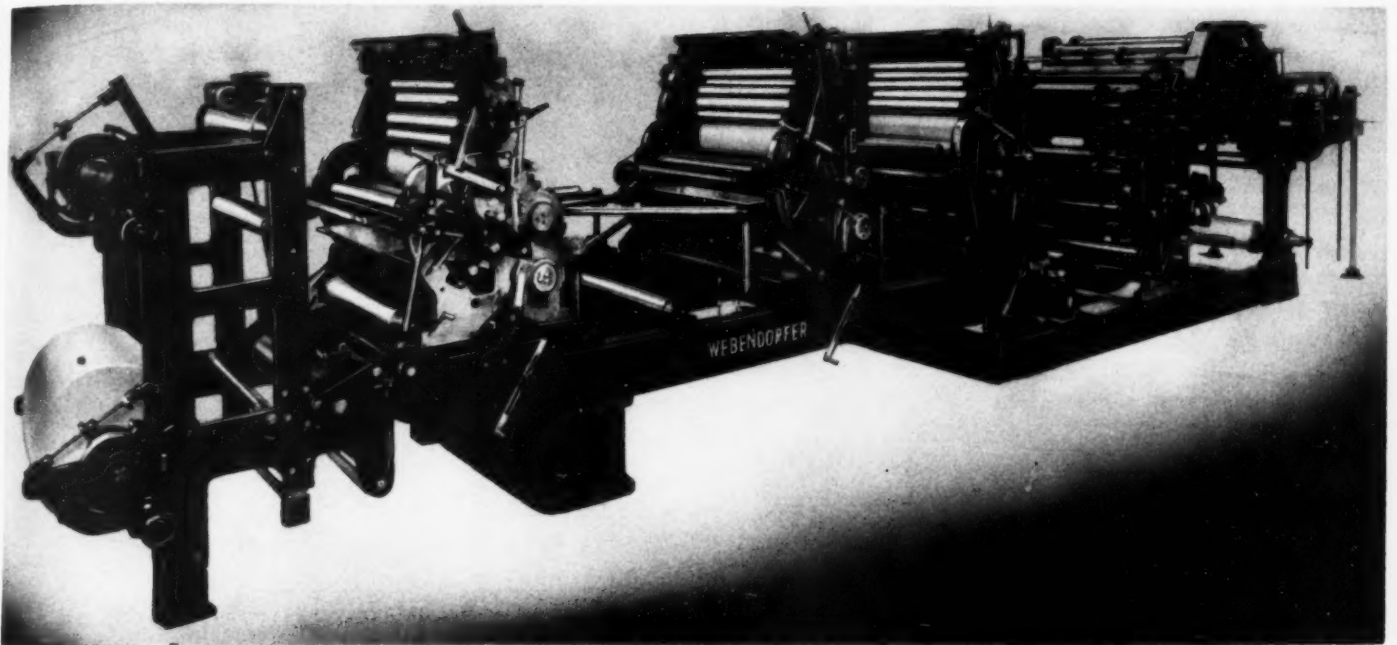
In cleaning a blanket, care should be taken not to use any solvent containing lead or lubricants. Should solvents containing lubricants be used, a greasy film will deposit on the blanket, and eventually transfer to the plates, resulting in inking difficulties. Blankets should be alternated so that excess embossing will not occur. Should the pressman note signs of embossing, the blanket should be removed and at the first opportunity replaced with another.

One of the troubles often attributed to blankets is not the fault of the blanket. This is when paper picks off on the blanket. Nine times out of ten, the reason for this is that the paper is not suited for offset work. This is usually due to misunderstanding on the part of letter-press printers who are not familiar with offset work. It is true that many different papers not designed for offset work may be used with a certain degree of success, but they are used more in the nature of demonstrations of the exceptional than for actual, practical day-by-day usage.

To get the proper results and avoid a lot of primary trouble, do not buy supplies on a price basis only, but get in touch with a reputable roller or blanket manufacturer.

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1,500 times 30,000 impressions equals 45,000,000 impressions, or 15,000,000 finished sheets lithographed in three colors per year.

The running speed of the large standard single color sheet feed offset press is from 4,000 to 5,000 sheets, or impressions, per hour.

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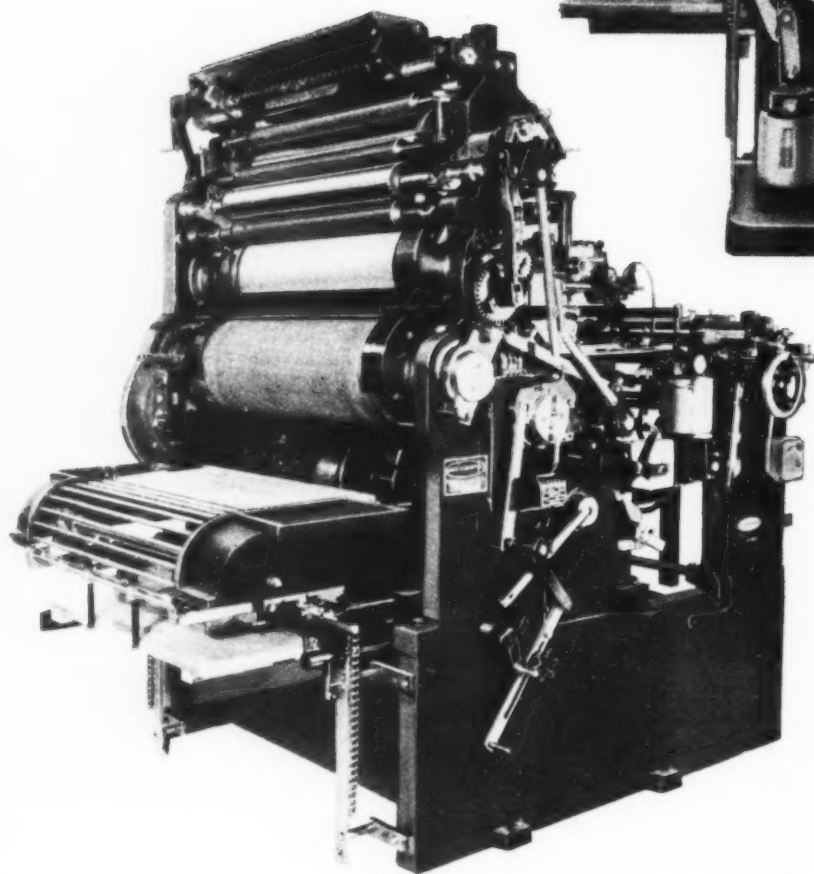
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SENDING COLORS BY WIRE

USING two new tools of science, research colorists at The International Printing Ink Corporation are sending color samples by telegraph—"colorgrams," they call them.

Colorgrams represent the most accurate means of color transmission. Advertisers, printers, designers, painters, cosmeticians, and anyone else who deals with color soon may be sending color specifications and receiving color matches by this fast and precise method of "wiring" color.

Laboratory men at IPI already have sent several "colorgrams" from New York when rush requests for color matches have been received from Chicago.

This is how colorgrams came into being. Western Union has recently opened a new facsimile service to commercial use (between New York and Chicago and New York and Buffalo). This process transmits by telegraph any line impression—handwriting, drawings, curves, and so on.

In IPI's Research Laboratories, a recently-developed machine called the recording photoelectric spectrophotometer is used for analyzing, matching, and standardizing colors. Invented at Massachusetts Institute of Technology, the "Spector" has been found to be an analyzer much more precise than the human eye. It detects color variations

that the eye could never see at all, and it accurately distinguishes between more than two million different colors.

Through a complex photoelectric system, the Spector charts in four minutes on a sheet of graph paper the characteristics of any color. Every color has its own individual graph curve. By examining these curves, engineers can easily determine the reflectance properties of any color—or they can tell whether colors match. No two curves are exactly alike, unless they are for the same color. So an absolute match is assured when two curves coincide.

Western Union's facsimile service makes it possible to send Spector curves by wire. Thus scientifically accurate color specifications or color matches can be telegraphed in a few minutes to printers, advertisers, designers, or anyone who needs a color analysis in a hurry.

Now that the spectrophotometer's analyses may be transmitted by wire, the field of application for this instrument widens. Perhaps manufacturers of cosmetics will send "Colorgrams" from New York to the hinterlands showing just what the latest shade of Boudoir Blue Mascara or Passionate Peach Suntan Powder is like. The Spector, being a cold and unemotional apparatus, could dispassionately record the most exotic colors in the beautician's palette.



Here, two yellows are being sent by wire to Chicago from New York via Western Union's new facsimile process. It telegraphs line impressions. The spectrophotometer, automatic color analyzer in service at International Printing Ink's laboratories, charts the characteristics of any color on graph paper. These "colorgrams" make it possible to transmit rush color matches and specifications via the facsimile telegraph system.

You may believe that you are already making a fair profit out of your business. But is it a fair profit? That's the point to keep in mind when you are tempted to make what may be an unwise expenditure. Does this profit yield you a salary greater than you could earn by working for some other concern? Is the money you have invested in the business also bringing in an adequate return? In addition, are your profits large enough to permit you to charge off a good depreciation every year on all your machinery and other equipment? Not until you can answer yes to all these questions can you be sure your business is yielding a fair profit.

There are two kinds of discontent in this world—the discontent that works, and the discontent that wrings its hands. The first gets what it wants, and the second loses what it has. There's no cure for the first but success; and there's no cure at all for the second.—Gordon Graham.

You will learn all about new photo-lithographic machinery, equipment, and supplies at the exhibition, to be held in connection with the 1937 Convention of the National Association of Photo-Lithographers, to be held at Hotel Carter, Cleveland, on October 14th, 15th, and 16th. Write National Association Photo-Lithographer, 1776 Broadway for full information.

Personnel Administration

By SIMON WORMS

WE all know that any lithographic enterprise is organized for the purpose of making a profit from its operations. In order to secure this profit, certain functions enter into the operations of that company. Among these functions may be mentioned the activities of selling, purchasing, production, financing and personnel administration. Every organization, whether large or small, usually performs these activities in some degree. They are needed for the proper organization of the company as well as for the complete managerial control within the company.

As mentioned, personnel administration is one of these functions and a very important one for the efficient conduct of a company. I propose to discuss the various factors which enter into a well-organized personnel program.

In order that we may understand the objectives of the personnel administrative activity, we may define such an activity as the planning, supervising, directing, and co-ordinating of those activities of an organization which contribute to realizing the purpose of that organization with a minimum of human effort and friction, with an animating spirit of co-operation, and with proper regard for the genuine well-being of all members of the organization.

From the foregoing, it would seem that the objectives of a well-organized personnel program are:

1. To increase the efficiency of the working force.
2. To promote the co-operation of the employees.
3. To provide for the physical and mental well-being of the employees.

To attain the objective of increasing the efficiency of the working force, the following policies will aid materially:

1. Training new workers in company policies and in knowledge of the uses of the company's product.
2. Systematic check-up of all working conditions.
3. Training in personal hygiene and safety.
4. Job analysis and preparation of job specifications.
5. Knowledge of the labor market and the sources of supply.

6. Pay at least the prevailing scales of wages for the various classifications of positions.
7. In addition to basic pay schedules, establish financial incentives, where such plans can be properly applied.

The following policies are suggested to increase the co-operation of the employees:

1. Inform employee as to his position in the organization, stating his responsibilities and duties.
2. Inform employee as to company personnel policies and methods.
3. Stimulate group co-ordination and co-operation.
4. Establish methods and means for settling grievances.
5. Induce management to co-operate with their employees through their chosen representatives.
6. Adjustment of questions of discharge.

In order to provide for the physical and mental well-being of the employees, the following procedures are suggested:

1. Recommendations of standards of physical fitness for workers at different positions.
2. Maintaining those standards of physical fitness by means of physical examinations, first aid work, and the giving of individual medical advice.
3. Systematic plant inspection to maintain working facilities in proper and safe condition.
4. Control and reduction of accidents by means of safeguarding hazards, following best building practice, safety organization, and follow-up of accidents.
5. Systematic examination of working conditions including cleanliness, ventilation, humidity, lighting, heating, washing facilities, and toilet equipment.
6. Co-operation in studying and investigating absences.
7. Installing benefit and insurance arrangements.
8. Establishing thrift activities.

The foregoing briefly presents the basic features of a desirable personnel program in a well-organized company. However, each company

NAME OF COMPANY APPLICATION FOR EMPLOYMENT

Name of Applicant _____ Date _____

Address _____ Telephone Number _____
(Number) (Street) (City) (State)

Age _____ Date of Birth _____ Number of Dependents _____

Position Desired _____ Salary Desired _____

Nationality _____ Weight _____ Height _____ Physical Defects _____

Did you work for this company before? _____ If so, when? _____

Are you a member of the union? _____

Education: _____

Name	Address	No. of Years Attended	When Graduated
------	---------	-----------------------	----------------

Grammar School _____

High School _____

College or Technical School _____

Experience (state record of employment for past 15 years):

Name of Employer	Address	Position Held	Name of Supervisor	Period of Time Employed	Salary Received	Reason for Leaving
------------------	---------	---------------	--------------------	-------------------------	-----------------	--------------------

1. _____

2. _____

3. _____

4. _____

5. _____

Briefly summarize the duties performed in each of these companies, including the types of machines worked on, speed maintained, and type of work produced.

References: Submit the names of three persons, other than relatives or former employers, who can vouch for your character and ability.

Name	Address	Occupation	Number of Years Known
------	---------	------------	-----------------------

1. _____

2. _____

3. _____

State any other information which may aid us in determining your adaptability, using the reverse side of this form.

Date Hired _____ For Dept. No. _____

Salary to Start _____ Remarks _____

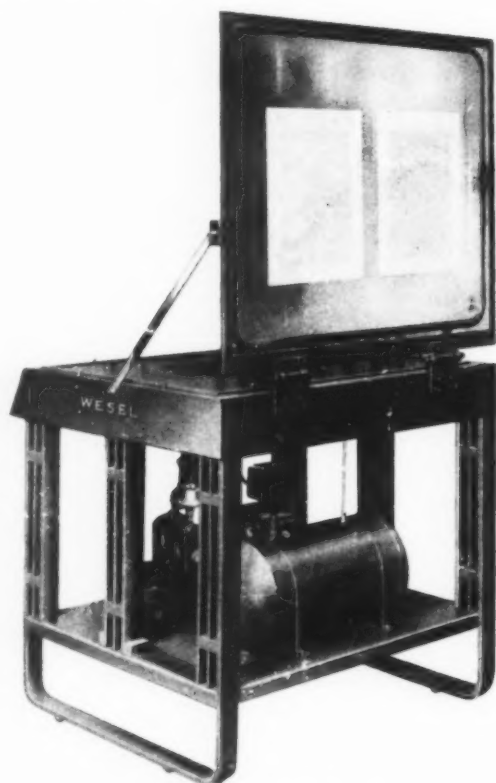
Interviewed By _____

Signature _____

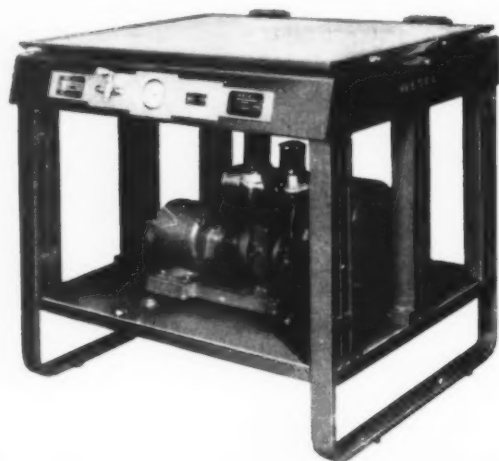
MAY 1937

WESEL PATENTED VACUUM PRINTING FRAMES

Makers of complete line of photo-lithographic plate-making equipment. Over 75 plants Wesel equipped during the past two years.



Open View of Wesel Vacuum Printing Frame



Closed View of Wesel Vacuum Printing Frame

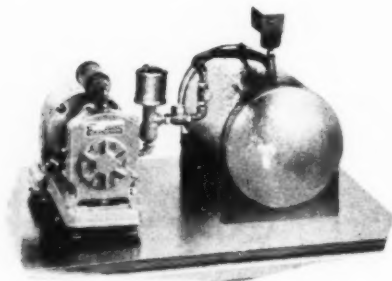
THE Wesel Printing Frame delivers contact between negatives and sensitized material in approximately two seconds and without the use of hooks, clamps, or fastenings of any kind. The new vacuum reserve tank is automatically exhausted of its air content, thus upon opening vacuum valve, the air is instantly exhausted from blanket to vacuum reserve tank.

When the pressure reaches the minimum point, the vacuum control mechanism automatically starts vacuum pump and motor, thus again exhausting the air content of the reserve tank. The operator turns on the electric power in the morning and the machine operates automatically during the day without further attention to the power plant.

Illustrations indicate the method of construction and operation. The entire mechanism is contained within one integral unit, easily moved about the plant to suit the operator's requirements.

Another new feature is the use of a special new "quartz crystal" glass, developed in Wesel laboratories. Under test, this affords 25% faster exposure. It is not ordinary plate glass, but is free of all foreign substances such as iron and other oxides, which otherwise have a tendency to retard light action and create distortion.

Motor and pump are built into one integral unit on a single metal base. This base is supported by a series of compression springs, eliminating all noise and vibration. Entire unit is all metal construction; made in 24 x 30" and 30 x 42" sizes. It is convenient and accurate for all kinds of intricate printing of single and multi-register work.



Power Unit for Wesel Vacuum Printing Frame

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CHICAGO OFFICE:
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58 Hubbard Blvd.



REGISTER

DESIGN

CONSTRUCTION

INK AND WATER

FEEDER

DELIVERY

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that deserve a searching scrutiny



THAT UNIT CONTROL IS A
GREAT WAY TO INSURE
ACCURATE REGISTER.

DESIGNED BY HOE . . .
IT MUST BE A GOOD PRESS.

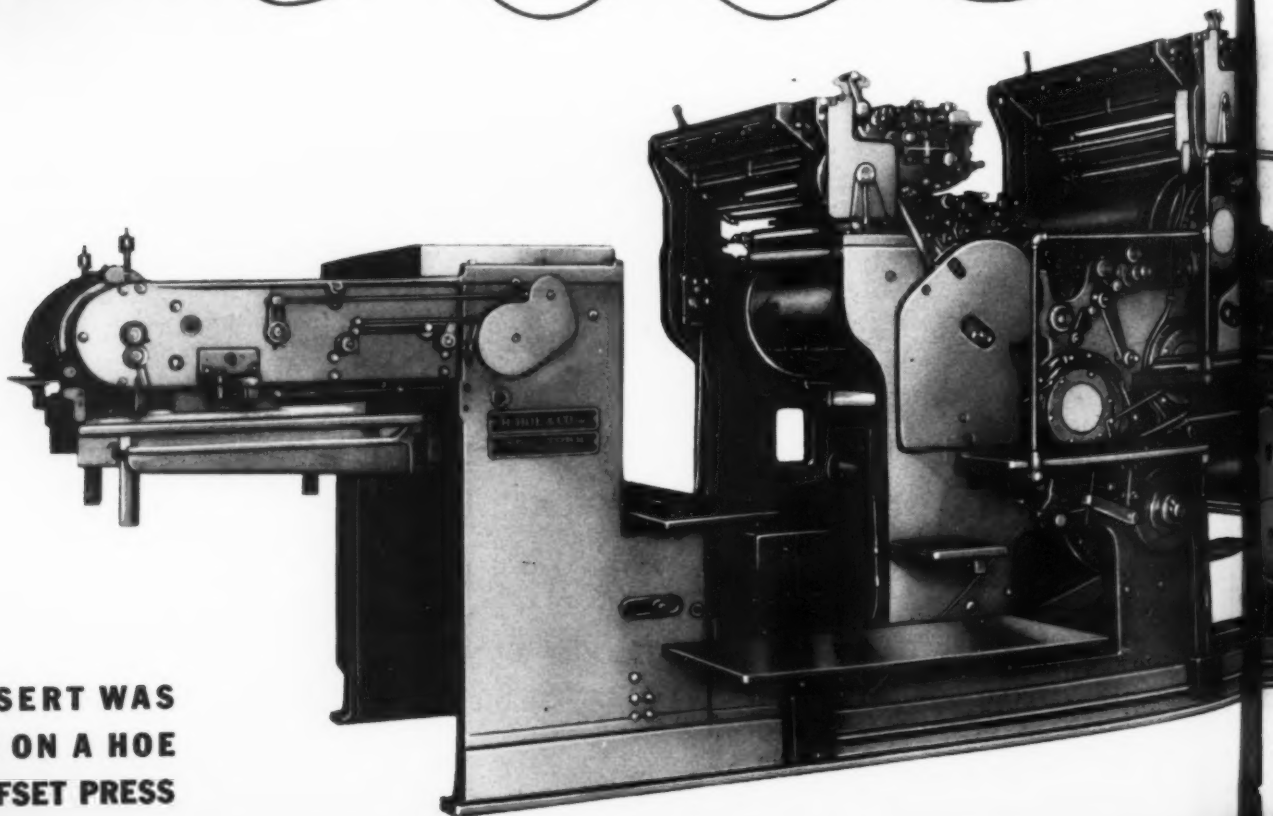
IT'S BUILT TO STAND UP
AT HIGH SPEEDS FOR YEARS
OF SERVICE.

VERY DELICATE CONTROL OF INK
AND WATER DISTRIBUTION . . . THAT
MEANS BETTER PRESSWORK.

FAULTLESS FEEDING . . .
THAT'S THE FIRST STEP FOR
A PERFECT JOB.

THAT'S THE MOST CONVENIENT
DELIVERY I'VE EVER SEEN

**THIS INSERT WAS
PRINTED ON A HOE
SUPER-OFFSET PRESS**



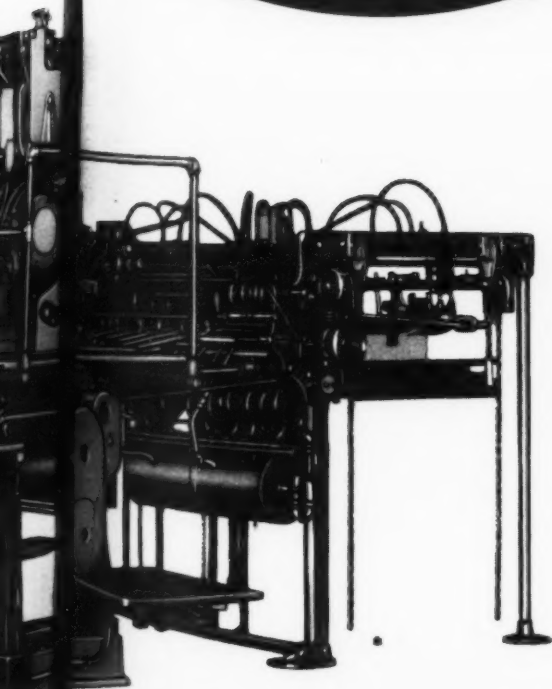
In Your Search for Lithography Profits, Don't Overlook

HOE

Super-Offset

PRESSES

CONVENIENT
EVER SEEN



Hoe Two-Color
Super-Offset Press

REGISTER

Lithographers who operate the Hoe Super-Offset Press

enjoy unusually accurate register. The registering mechanism, slow-down device, and sheet detector controls are all driven from the press motor . . . not from the feeder. With one-third of the cylinder circumference allowing ample time for the sheet to settle against its three register points, there is no sacrifice of register at even the highest speeds.

● Adjustments are extremely simple. For example, the front lay of the sheet, front register, and any of the front guides can be altered by a single adjustment from *either* side of the press by a simple turn of a bolt.

DESIGN

One hundred and thirty years of continuous experience in

building all kinds of presses are your assurance of a sound, practical press design. The pioneering spirit of Hoe insures the inclusion of the latest in modern engineering improvements. The extensiveness of Hoe's experimental work through the years is your guarantee of a construction proved by years of service, with no necessity for testing or experimenting in your pressroom. Hoe's own pride in cherishing a hard won reputation for building the World's Finest Presses is your protection against unexpected failures in service or excessive maintenance throughout a long, useful service life.

CONSTRUCTION

Every casting which

enters into a Hoe Super-Offset Press is produced in our own foundry, and is poured from materials determined by an experienced metallurgical staff after careful consideration of the functions which the part will be required to perform in service. Cylinders, gears, side frames, and even smaller elements of the press, each has its respective formula. That explains why Hoe Cylinders never warp after a short period of service, why gear teeth do not strip out under ordinary running conditions, why even small castings very seldom break. Longevity is built into the very first step of their construction.

INK AND WATER

moisture control in offset printing is recognized by Hoe and provided for with an excellent design of dampening device. Three different methods of regulating the water supply are found on the Hoe Super-Offset Press, and they can be operated while the press is running.

- To extract the maximum usefulness from every pound of ink, the form rollers, first of all, are larger than usual. Five of them are arranged for ideal distribution. The vibrating system is flexible, with drums and rollers adjustable for stroke, to permit the pressman to get the ideal degree of vibration for a specific job.

FEEDER

On this modern feeding arrangement, all rollers, brushes, drags and pushers have been eliminated. Hoe's simple system of register doesn't require them. The result is a great saving of sheets that would be spoiled by the older methods of feeding.

- Without manipulating by the operator, pressure goes "off" automatically, and the press slows down to idling speed, whenever a defective sheet fails to reach either front guide. The first sheets printed immediately thereafter are precisely the color of all other sheets, because "loading" of the inker is prevented by automatic suspension of the form rollers and ink fountain.

DELIVERY

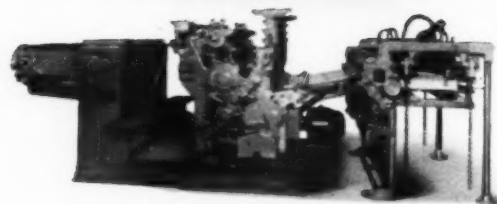
The Hoe lowering delivery is fully automatic. Even short piles require no hand cranking but are lowered, and the platform replaced, by an auxiliary motor which is provided as standard equipment.

- Note the absence of posts, chains or cables that would interfere with speedy removal of the printed sheets. A loaded platform can be moved from the delivery end of the press in whatever direction happens to be most convenient at the time.

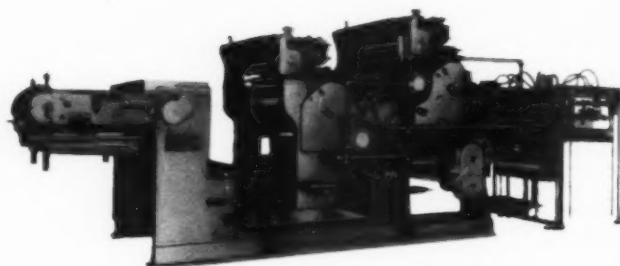
- Mechanically air-controlled jogging assures printed sheets ready for re-feeding, trimming, or folding, without loss of time for secondary piling or jogging.

The importance of delicate

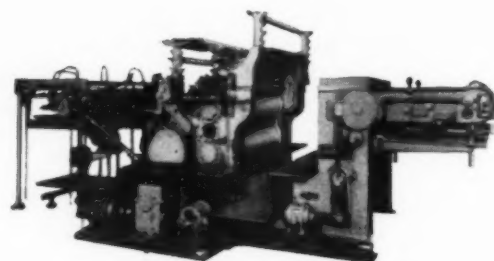
THE HOE LINE of Super-Offset PRESSES



Hoe Super-Offset Single-Color Press
30" x 42"



Hoe Super-Offset Two-Color Press
42" x 55 1/2"



Hoe Super-Offset Single-Color Press
42" x 55 1/2"

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may not adopt all these policies within its own organization. The reason for this may be because of its size or because the features of the activity are not entirely applicable to the particular company.

In any event, some of these principles should be applied, for they will eventually lead to lower labor costs, a decrease of labor turnover, lower costs of maintaining machinery and equipment, greater coordination of the varied activities within the plant, and, in total, a reduction of manufacturing costs as far as the labor element is concerned.

To properly administrate these functions is the duty of the personnel department. The main divisions of this department, which is charged with the responsibility of securing and maintaining an effective working force, are:

- a. Determining what to do.
- b. Deciding how to do it.
- c. Doing it.

Determining what to do rests finally with the head of the department, subject, of course, to the decision of his superiors. The head of the department is responsible, also, for having an organization that will work out how to do the things decided upon and for having an organization to do those things.

The employing function involves selecting the worker and placing him in his job. This would indicate that the employment department must know the present and probable future demand for workers and also the types of workers needed. It must also know the sources of supply for the desired workers.

The employing staff will determine its actions upon the basis of particular business conditions

which may demand an increased number of employees, upon the basis of requisitions for help which may be submitted to it by the department supervisors, or upon the basis of particular job specifications which will show the type of technical help desired.

A typical requisition for help may include the following information:

- a. Department for which employees are desired.
- b. Number of employees desired.
- c. Date on which the new employees are needed.
- d. Day work or night work.
- e. Rate of pay to start.
- f. Remarks concerning the type of help desired.
- g. Date the requisition was filled.

The employing staff must then contact the sources of supply to try to secure the desired workers. Inquiries may be sent to trade associations, trade unions, and to employment agencies. Advertisements may be placed in the newspapers to secure the desired help. The employing staff must also know the possibilities of finding workers among the friends of present employees, among workers voluntarily applying at the office, or by transfer or promotion within the plant.

The interviewer, whose duty it is to select the right person for the particular job that is vacant, will determine his decision upon the basis of the application form which the applicant has submitted. This application would contain the following information:

1. Name of applicant.
2. Address of applicant.

3. Telephone number of applicant
4. Age of applicant.
5. Education of applicant.
6. Technical education of applicant.
7. Date on which applicant started in your employ.
8. Date on which applicant left your employ.
9. Record of previous employers and salaries obtained.
10. Reasons for leaving previous employers.

REQUISITION FOR HELP				
DEPT. NO. _____	DATE _____			
PLEASE FURNISH THIS DEPARTMENT WITH THE FOLLOWING HELP:				
NUMBER WANTED	TYPE OF EMPLOYEE	RATE TO START	DAY OR NIGHT	REMARKS
DATE WANTED _____				
DATE FILLED _____		FOREMAN _____		

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11. Salary received in your organization to start.
12. Department in which applicant was placed.
13. References of applicant as to business experience.
14. References of applicant as to character.
15. Rate of pay wanted.

After reviewing this application as well as checking the statements made thereon, the interviewer would make his decision as to the acceptance of the applicant. However, the applicant must first express his desire to accept the position which is vacant on the terms as outlined by the interviewer.

After the worker is selected, his introduction to the plant and to his job is made. In such an introduction, he is told of company policies and regulations, such as shop rules and safety regulations. Often an employees' manual prepared by the company is placed in his hand. He is shown points of interest to him, such as fire exits, locker rooms, and water fountains. In brief, he is enabled to begin his work with a clear understanding of what is expected of him and what is provided for him. The employment division keeps in touch with him during his first weeks of employment, co-operating with his foreman and instructors, and giving friendly advice.

Once a new employee is within the plant, the personnel manager must see that he is content and competent on the job. The function of maintaining the working force may be divided into problems of health and safety, service activities, group relations, and incentives for increased and better production.

A worker in good health of mind and body is more valuable to his employer than one who is run down, loses time through illness, and is disturbed by fear of losing his job through illness. It is the duty of the personnel manager to maintain the health and safety of the working force.

Daniel Webster once said: "Employment gives health, sobriety and morals. Constant employment and well-paid labor produce, in a country like ours, general prosperity, content and cheerfulness. Employment is Nature's physician and is essential to human happiness."

The service activities of the management may consist of insurance plans, pension plans, medical assistance, and co-operative plans.

Group relations should be maintained so that the management may communicate with the workers regarding their problems and the adjustments thereof.

To secure effective incentives for increased and better production is another problem which confronts the personnel department. Some of the incentives which may be used are:

1. Wages.
2. Bonus and profit-sharing schemes.
3. Promotion, which may or may not be connected with the wage incentive.
4. The development of interest in the work, including a voice in the management.

Another activity of the personnel department would be that of research work. The main purpose of this activity would be to set standards for maintaining and expediting the work of the personnel department. Some of the standards which this department might set are:

1. Standards of performance.
2. Standards of selecting new employees and retaining old employees.
3. Standard aids for the interview.
4. Standards of pay.
5. Standards of qualifications for the job.

The research division might also prepare the labor budget in concerns working under a budgetary control system. It would estimate the labor needs, the cost of securing the needed workers, the cost of the various service and health activities, the cost of the overhead, and the wage cost for the ensuing period. Thus, the management would be in a position to intelligently determine their labor costs for their productive program.

I have briefly outlined the policies and activities of a personnel program within an organization. As mentioned, there are many activities which come under its jurisdiction. The proper administration and maintenance of these activities will fully repay the management the cost of operating those activities. The application of these policies is recommended within every concern in some form, for they will aid materially in producing the product at a reduced labor cost.

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Early American Lithography

THIS publication is, of course, devoted primarily to furthering the use of photo-lithography, hence concerns itself largely with the technical and business problems of the industry. It is our purpose, however, to now and then glance briefly at the historical phases of lithography (the old stone process) and the influence of that method on American appreciation of art. You have guessed it. Like lots of other people we like to look at and talk about Currier and Ives prints. Notwithstanding many of these are most horrible chromos, they have an interest for thousands of people. Proof of the foregoing was found in a recent issue of the *New York Sun*. An illustration, as well as nearly a column of text, was given to a sale of a number of Currier and Ives prints.

This auction, which has held recently at the Plaza Art Galleries, was devoted to selling a number of subjects from the collection of Sorens K. Petersen, who devoted years to the collecting of these prints. Perhaps the most important was that rare specimen, "Washington's Entry Into New York," guaranteed in perfect condition. Another equally rare item, or collection of items, which doubtless brought a high price, was an almost complete series of the Presidents of the United States. Other prints of considerable value which were sold were "The Destruction of Tea at Boston Harbor," "The Declaration Committee," "John Hancock's Defiance," "Cornwallis is Taken," and "The Surrender of Cornwallis."

One of the rarest of the Currier and Ives prints sold at this auction is entitled, "Across the Continent—Westward the Course of Empire Takes its Way." This is a real work of art, remarkable for its perspective and excellent drawing, as well as the correct handling of details. It is, of course, an idealistic conception of the first transcontinental train stopping at a frontier settlement. It is, however, an admirable record of early American history and ranks high among the rare Currier & Ives group and coveted by all collectors.

Many books and magazine articles have been devoted to the C. & I. prints, and others of a similar character. A witty essayist, Russel Crouse, a few years ago compiled a volume, *Mr. Currier and Mr. Ives*, containing thirty-two of these prints, but touching only lightly on the prints themselves. The text of the book gives an unique panorama of the gaiety, customs, politics, and progress of the nineteenth century, with many humorous observations as well as many of the tragic happenings. In this connection, it should be remembered that whenever there was a disaster involving any great loss of life, C. & I. were quick to place on the market an imaginary reproduction of the event. It is for this, and many other reasons, that a collection of their prints gives such a vivid picture of American history. What if many of the subjects are flagrantly out of drawing, and the colors exceedingly crude, they are, nevertheless, typical of the times.

MAY 1937

3

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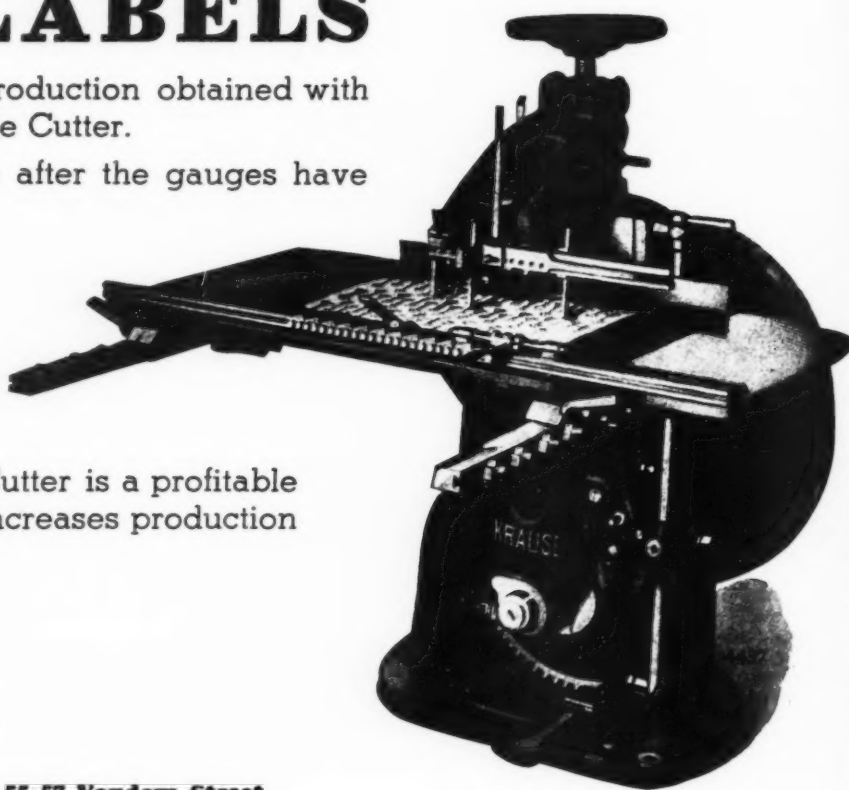
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BRIEFS

In writing for literature we would appreciate your mentioning THE PHOTO-LITHOGRAPHER

The George H. Morrill, Division General Printing Ink Corp., 100 Sixth Avenue, New York, will send to interested readers, a copy of the ink chart recently prepared by them. This chart, which can be hung on a wall, shows forty different shades of inks, as well as a chart on which telephone numbers frequently used can be listed for ready convenience.

The passing away of **George B. Siebold, Sr.**, Secretary and Treasurer of J. H. & G. B. Siebold, Inc., New York, on April 18th will indeed be regretted by the entire industry. Mr. Siebold will long be remembered for the many fine things he has done in the lithographic industry.

Barkon-Frink Tube Lighting Co., Long Island City, N. Y., has recently announced development of a new source of artificial daylight for use in plants where accurate color control and discrimination is essential. The new carbon dioxide lamp has been given a sufficiently long life to make it commercially practicable for color work by the use of an electronic circuit invented by Dr. T. J. Killian.

E. J. Kelly Company, the printing ink manufacturers of Kalamazoo, Mich., report the development of a non-scratch compound for color inks. The compound was developed in the Kelly laboratory after a number of requests had been received for a compound that would make tints and colors more resistant to rub and abrasion, especially on folding and cutting machines. It was found that by adding ten to fifteen percent of the compound to any ink, films were obtained which were hard enough to resist even the most vicious folding, cutting and glueing on machines. When over fifteen percent of the non-scratch compound was used, the two color strength was reduced and the difference in the hardness was not enough to compensate for it. By use of this compound, it is a very simple matter to obtain varying degrees of hardness of the dried ink film. Further tests proved that the presence of the compound did not cause the inks to crystallize—even with ten to fifteen percent of the compound added. It did not, however, prevent those inks from crystallizing which would normally do so.

Mr. John F. Devine, General Manager of the Fuchs & Lang Mfg. Co. Division, has been appointed Vice President of the General Printing Ink Corporation. Mr. Devine will continue his direction of the activities of The Fuchs & Lang Mfg. Co. Division.

"Principles of Dot Etching," a 32 page brochure issued by G. Cramer Dry Plate Co., incorporates the latest research on this important subject. The popularity of dot etching retention of opacity, rehalogenization,

reducing agents in dot etching, redevelopment of etched images, and camera and contact positives are important subjects that are discussed in most authoritative and impartial manner. The entire brochure is illustrated with photomicrographes showing actual halftone dot formation in the various stages or reduction. Interested readers desiring a copy of "Principles of Dot Etching" are invited to write the Graphic Arts Division of the G. Cramer Dry Etching Co., Shenandoah and Lemp Avenues, St. Louis, Mo.

New Drawing Paper Saves Time and Expense

PHOTO-LITHOGRAPHERS who operate art departments, and artists who draw for reproduction by photo-lithography or for letterpress printing, will find the new drawing paper, Doubletone, a device that will save an immense amount of time and money on art work that requires screen shading.

The artist makes his drawing in outline on Doubletone drawing paper (which contains two invisible screens) just as he would on any other paper. With a brush he applies a liquid, to bring out the gray tones. With another kind of liquid he then paints in those areas which are to be light gray. Solid blacks are, of course, put in with regular india ink. The artist thus has complete control of highlights. The drawing when finished is ready to be photographed and etched in line for letterpress work, or in line reproduction for photo-lithography. With the latter process, if the illustration is to appear with type, it is not necessary to make a separate negative—the type matter can be pasted in position on the drawing and both photographed at one operation.

Every artist who draws for photo-lithographic reproduction, as well as every photo-lithographer who operates an art department should write for a free sample kit of this remarkable drawing paper. Test out one of the several samples of the paper, using the liquid developers which are part of the kit. Send your request to The Craftint Manufacturing Co., 210 St. Clair Ave., N. W., Cleveland, Ohio.

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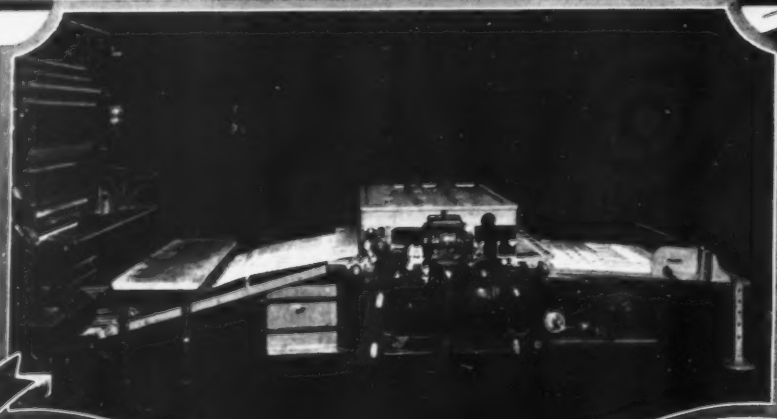
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2. Delivery driven from bronzer—independent of press, easily removed—no timing of bronzer necessary.
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Showing a low model bronzer in Direct Connection with Offset Press in plant of Sherwood Litho. Co., Chicago, Ill.

Made in four sizes: 19"-35"-51" and 67". When writing for further information please mention largest size sheet for bronzing, also name of press with which we are to run bronzer.

C. B. HENSCHEL MFG. CO.

Milwaukee, Wisconsin

National Association of Photo-Lithographers to Meet in Cleveland in October

IT is announced that the Board of Directors of the National Association of Photo-Lithographers, at a session held on March 20th, decided to choose Cleveland as the place for the 1937 convention. The meeting will be for three days, Thursday, Friday, and Saturday, October 14th, 15th, and 16th.

What will make the convention more interesting and valuable, and thus secure a larger attendance is that at the same time and also in Cleveland, will be the meeting of the Direct Mail Advertising Association, an organization helping to increase the sales of direct-mail advertising.

The program for the convention is now being prepared, and it is intended that one complete day will be set aside for technical discussions of materials, supplies, equipment, and processes and procedures in the lithographic industry. Ample space will be provided for all who sell machinery, supplies, and services to the lithographic industry. There will also be a full discussion by experts of the many kinds of negatives, inks, papers, and other photo-lithographic material.

Trade practices, costs and selling prices and methods of estimating, as found or practiced in various parts of the country, will be fully discussed.

It is also expected that photo-lithographers specializing on various kinds of work will meet in small groups to discuss the details of those problems which apply to their specialty.

When the program is completed, which will be in the near future, complete details will appear in *THE PHOTO-LITHOGRAPHER*.

Paul A. Heideke, President and Walter E. Soderstrom, Executive Secretary of the National Association of Photo-Lithographers have charge of all the details of the convention.

This convention offers an excellent opportunity for those who have recently entered the photo-lithographic industry to take advantage of the advice of those who have been long in this field—especially problems pertaining to selling, production, and management.

The convention will be held at the Hotel Carter, which is not only a first class hostelry in every respect, but is well equipped to take care of the convention.

Arrangements have also been made for delegates to take a trip through the large and well equipped plant of the Harris-Seybold-Potter Co., where they will have an opportunity to observe the construction of Harris lithographic presses.

It is also planned to have an evening banquet during the convention, and arrangements have been made for special entertainments for ladies who attend the meeting.

MAY 1937

Have You Tried...

CRYSTAL OFFSET

- A beautiful, opaque grade, clean, smooth and flat. Surface sized and with just the right moisture content to prevent wrinkles and stretch.

White and india in all sizes and weights. Also fancy finishes.

Large stocks on hand for immediate delivery; special orders made quickly. Samples and dummies cheerfully supplied.

LEARN TO TRY US FIRST

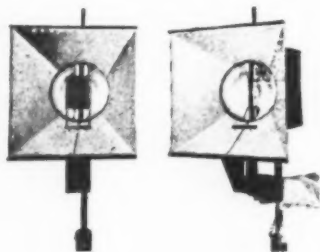
ROYAL PAPER CORP.

formerly ROYAL CARD & PAPER CO.

ELEVENTH AVENUE AND 25th STREET
NEW YORK



Our Envelope Manufacturing Department will supply quickly and economically any style of envelope from any stock to go with mailing pieces. Samples and prices cheerfully submitted.



NEW MACBETH ELECTIVE CLOSE-UP DIFFUSER

Use it or not, as you choose.
The real answer to the question of diffusers.

If you want diffusers, push them up in place. If you want direct light, pull down with finger tips and diffusers disappear instantly.

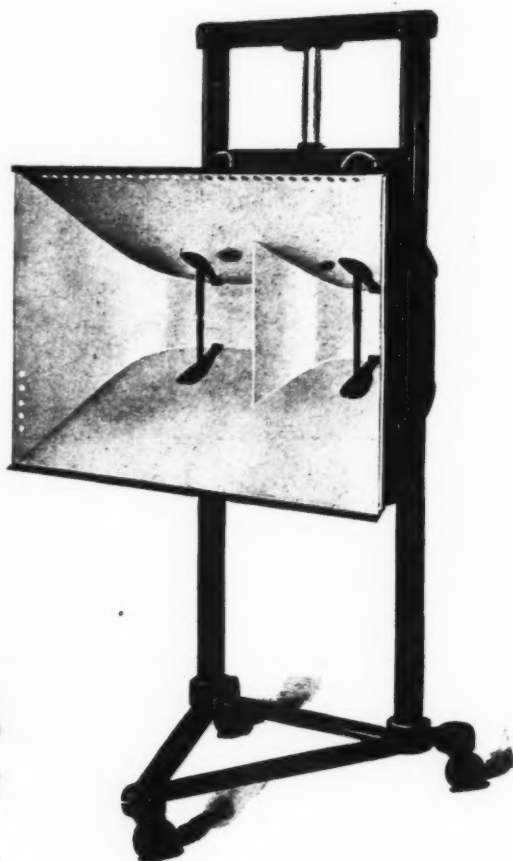
WORLD'S BEST PRINTING LAMP FOR LARGE FRAMES TYPE B-16

Specially designed reflector builds up light on edges and corners of frame. Result—you can load frame to capacity and still edges and corners of print will come up without over-printing center. Speed without fuzziness or halation.

Full twelve-inch trim. It is only necessary to trim each set of carbons once. Burn five hours without re-trimming.

Mounted on counterbalancing stand. Lamp readily moved up or down. Large ballbearing casters make it easy to move lamp in any direction.

There is a Macbeth lamp for every job in the Graphic Arts.



Macbeth

World's Standard Photo Lamps

MACBETH ARC LAMP CO. 875 N. 28th St., Philadelphia, Pa.

OFFSET **INKS** LITHO

Lithographers throughout the country prefer **Sinclair & Carroll** inks for their color strength and good clean running properties on the press. These inks consistently prove their own merit and dependability by a faithful and clear cut reproduction of subject matter. In addition, many lithographers find sound value in the personal interest and cooperation always evident wherever **Sinclair & Carroll** inks are in use.

We will welcome the opportunities you afford us to formulate inks to your specific requirements.

SINCLAIR & CARROLL CO., Inc.

Makers of Printing, Litho and Litho Offset Inks

391-3-5 ELEVENTH AVE. Tel. BRyant 9-3566

NEW YORK CITY

CHICAGO: 440 West Superior Street Tel. Superior 3481
NEW ORLEANS, LA.: 518 Natchez St. Tel. Main 4481

LOS ANGELES, CAL.: 417 E. Pico Street, Tel. Prospect 7296
SAN FRANCISCO, CAL. 345 Battery Street Tel. Garfield 3730

BLANKET TROUBLES

(Continued from page 24)

a dry cloth. As the sulfur is now rubbed into the blanket as explained above, it will be noted that the sulfur now adheres to the rubber instead of just lying loose on the surface.

Always rest a blanket after a long run; never overwork it; tackiness will be a chronic ailment unless the blanket is given a rest. In the case of swelling, rest the blanket for a few days, by hanging in a place out of the sunlight. It will be noticed that the swelling will leave the rubber after the oils evaporate. Before hanging a blanket to rest, always wash with gasoline and powder with sulfur according to the above procedure.

Suitable Blanket Washes

Gasoline or a mixture of Benzol 6 gallons and acetone 4 gallons.

Avoid the Following

Piling of the ink on the blanket.

Kerosene or any oil as a reducer that has a tendency to attack rubber.

Turpentine on the blanket—it destroys rubber.

Parafin oils and non-volatile solvents—they swell the rubber.

Carbon disulfide, it eventually ruins the rubber and increases tackiness.

Overpressure between plate and blanket.

Overpressure between blanket and paper cylinder, since they cause tackiness.

An unusual 48-page pictorial insert was a feature of the March issue of *Modern Packaging*, which celebrated the magazine's tenth anniversary.

The insert showed the awards made in the 1936 All-America Package Competition, and was lithographed by The National Process Company, 75 Varick Street, New York, N. Y.

Using their special duotone process they have produced an outstanding job in which the careful use of color has added greatly to its attractiveness.

This insert also made up the greater portion of the souvenir program distributed at the Modern Packaging Presentation dinner, held at the Hotel New Yorker; and served as an introduction to the full color film "A Miracle of Modern Merchandising."

You will gain a wealth of technical information at the Cleveland Convention of The National Association of Photo-Lithographers, to be held on October 14th-16th.

Don't be a Rip Van Winkle ... About Rollers



Old Rip was a good scout, but it was never recorded that he made any money. Here he is, dreaming rosy dreams, little realizing that when he awakes he will be far behind the times.

In buying offset rollers, as in anything else, there are many Rip Van Winkle buyers. They snooze soundly and peacefully, secure in the belief that business conditions and mechanical advancement are still at the same point of progress as when they began to mentally fall into the arms of Morpheus. And, of course, they don't realize that there has been a definite advancement in offset rollers—Litho-Print—rollers that would make their work better and easier.

If they woke up, they'd find that Litho-Print rollers not only produce much finer offset work than any other rollers, but also at the highest speeds and with the greatest sensible economy. It's time they did wake up and investigate Litho-Print. They've been specifically designed for offset printing, and are backed by Bingham's reputation. Their competitors are using them.



SAM'L BINGHAM'S SON MFG. CO.

ATLANTA	DES MOINES	INDIANAPOLIS	MINNEAPOLIS
CHICAGO	DETROIT	KALAMAZOO	PITTSBURGH
CLEVELAND	DALLAS	KANSAS CITY	SPRINGFIELD, O.
NASHVILLE	HOUSTON	ST. LOUIS	OKLAHOMA CITY

Pacific Coast Representatives.

CALIFORNIA INK COMPANY, INC.

SAN FRANCISCO, LOS ANGELES, PORTLAND, SEATTLE, SALT LAKE CITY

OKAY OPAQUE

BETTER FINISHED NEGATIVES IN SHORTER TIME

● Smooth flowing for the rapid brush sweep ● Dense opacity ● Dry Quickly ● Non-Cracking.

WET PROCESS OPAQUE

● Has extremely smooth film and will not pile up ● Will hold tenaciously on glass. ● Gives film of dense opacity. ● Easily removed with alcohol. ● Will not chip or flake under heat. ● Can be used in ruling pens.

CELLULOSE OPAQUE

FOR MASKING ● Lays smooth and will not creep or run.

● One application gives film of dense opacity. ● Dries quickly and is non-cracking. ● Film easily removed with water.

OKAY DEVELOPER

DEPENDABLE PRESS PLATES IN A FLASH

● Easily applied to any metal ● Clear, sharp and acid resistant image ● Stand up for long press life ● Release easily, under high humidity from bare grain.

Four ★★★★★ numbers that have clicked in a big way . . . Samples cheerfully submitted at your request

FRANCIS G. OKIE CO.

Manufacturer Photo-Offset Specialties and Inks

247 S. THIRD STREET, PHILADELPHIA, PA.

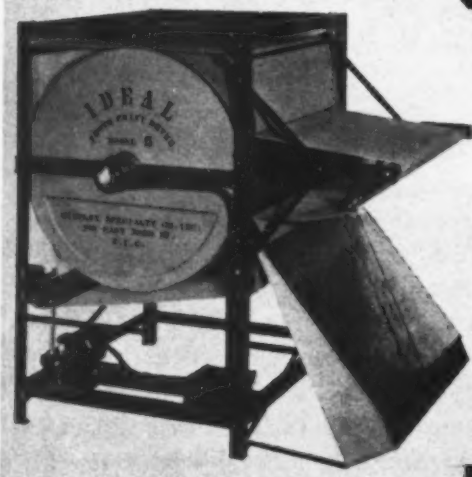
New York Agent: E. T. Sullebarger Co., 116 John St., New York, N. Y.

Baltimore Agent: E. W. Parker, 1207 S. Highland Ave., Baltimore, Md.

Chicago Agent: John A. Sullebarger, 538 South Clark St., Chicago, Ill.

Boston Agent: Arthur W. Eagleston, 22 Palmer St., Arlington, Mass.

Cincinnati Agent: McKinley Litho Supply Co., 1623 John St., Cincinnati, Ohio



CHECK THESE 5 POINTS BEFORE YOU BUY ANY DRYER!

The New Improved SIMPLEX DRYERS Have Them All!

- 1. BELT ALIGNMENT:** SIMPLEX DRYERS have a patented belt control, both belts held automatically in position. No shifting from side to side.
- 2. POSITIVE TRACTION:** SIMPLEX DRYERS are equipped with a direct worm gear drive, guaranteeing positive traction. No leather belts used to slip or break.
- 3. DRYING ABILITY:** SIMPLEX DRYERS are guaranteed to properly dry any form of photographic paper—single or double weight, photostatic, blue print, negative paper, etc.—without any loss of size or tonal value. Dryers are made in 20, 30, 40 and 50 inch widths and are either gas or electrically heated. The popular 30 inch model has a drying capacity of four hundred and fifty 8x10 prints per hour!
- 4. SAFETY FEATURES:** ALL SIMPLEX Gas Models have a combination gas-electric switch and pilot light—making it impossible to turn off the motor without turning off the gas. (PATENTED) Electric models have 3-heat switch. Dryers may be used all day and turned off without injury to the belts. Prints are carried between the two belts—never touching hot metal.
- 5. ADDITIONAL FEATURES:** Steel drive ball-bearing rollers. Enclosed gears connected with motor by flexible coupling—insuring longer life to motor and gears. Zipper-laced conveying belt. Dryers are fitted with either 110 or 220-Volt A.C. or D.C. Motor.

All machines are shipped set up, ready to install and will go through any door 31" wide by removing arms

DEALERS: Write for Distribution in your Territory

SIMPLEX SPECIALTY CO., Inc., 206 E. 33rd St., New York

CLINE-WESTINGHOUSE ELECTRICAL EQUIPMENT

ALTERNATING
CURRENT

FOR OFFSET PRESSES

DIRECT
CURRENT

Used by the Best Known Lithographers

● BE SURE TO SPECIFY CLINE SYSTEM CONTROL ●

Safe . . . Standard . . . Reliable

ENGINEERED FOR . . .
LOCAL CONDITIONS



DESIGNED FOR . . .
PRESS REQUIREMENTS

CHICAGO

SAN FRANCISCO

NEW YORK

TECHNICAL DEPARTMENT

By DR. L. R. MELOY

Questions and Answers

QUESTION: *Which are the best colors to run at the same time on a two-color press, the job being in six colors? Can I run the yellow and black at the same time?*—
PHILADELPHIA, PA.

ANSWER: My preference is to run the colors in their regular order: that is, the red and the yellow the same time through the press, next the light and the dark blue, and the last the pink followed by the black: assuming, of course, that this happens to be the colors on your six-color job. But this order of printing the color is not a fixed rule. There may be certain kinds of jobs where a different order of printing the colors is desirable. For example, it may be that the job calls for a dull black; or, more likely, it may be desirable to obtain as brilliant a black as it is possible to secure. In the first instance the strength of the black can be overcome to a certain extent by printing it first, the other colors printed over it reducing its intensity. With the second instance, and which most jobs require, the black should be as brilliant and intense as possible, which means it should be the last color printed. From the foregoing you will note it is impossible to establish any fixed rule for the order in which colors are to be printed. It depends on the nature of the job, and the results you want to obtain. It may be that the purpose is to match the original as closely as possible, which means you must depend on your judgment and experience as to which order of colors will give the best results. Then there are other jobs where it is desirable to obtain a reproduction different from the original. For example, the original may have too strong a red. You can overcome this to a certain extent by reducing the intensity of the red ink, cutting down the amount of it, and you can further reduce it by running it first, followed by the yellow and the other colors. In this connection, the majority of the problems confronting the photo-lithographer deal with chemical and mechanical difficulties. Process-color reproduction in four to six colors is the most difficult of all work to handle. It requires the best equipment, the highest degree of skill, and long experience in the camera room. The foregoing also applies to every other operation to the completion of the job. This means that it is not enough that the pressman doing process color work will be a skilled worker. He should also have a thorough knowledge of colors and the results obtained when colors are combined. In short, the expert color-pressman should be not only a skilled mechanic, possess considerable knowledge of chemistry, but also know colors as an artist knows them.

MAY 1937

EVERY USER A BOOSTER!

EGGSACT

Processed

**EGG ALBUMEN
CONCENTRATE**

for the

PHOTO-LITHOGRAPHER

EGGSACT

is a scientific product specially prepared for use as a sensitizer base in photolithography, on both zinc and aluminum plates.

The processing method employed removes all impurities and insoluble matter from the egg albumen and not only retains and preserves the film and adhesive properties, but actually improves them.

CONCENTRATE

"EGGSACT" specific gravity 1.094, Baume, 13.50, pH value 8.60.

SOLUBILITY

"EGGSACT" is completely soluble in water in any and all proportions, and produces a sparkling, clear sensitizer.

CONVENIENT

"EGGSACT" is very convenient and easy to handle, because it is always ready for use. No waiting for albumen to dissolve, no straining or filtering necessary.

STORAGE

"EGGSACT" requires no special storage because it remains constant indefinitely at normal room temperature.

Your plate maker has many problems.

Help him with an "EGGSACT" start.

"EGGSACT" is always uniform and free from variations, such as exist in dehydrated egg albumen.

SO CLEAR IT SPARKLES

ODORLESS

ASK YOUR SUPPLY HOUSE ABOUT IT

MANUFACTURED BY

THEIR HOLLAND

7048 JONES AVE., N. W.

SEATTLE, WASH.

In the West: THE CALIFORNIA INK CO, Inc.

"WHERE TO BUY IT"

This Handy Reference Page is a regular monthly feature of **THE PHOTO-LITHOGRAPHER**
It is an accurate guide to reliable firms

Listings are carried on this page at the rate of *One Dollar Per Line per Month or Ten Dollars a Year Payable in Advance*

ACCOUNTANTS

Kromberg & Associates, C. P. A.'s, J., 461 Eighth Ave., New York, N. Y.
Reinish, Samuel S., C. P. A., 2 Lafayette St., New York, N. Y.

ACIDS

International Printing Ink Corporation, 75 Varick St., New York, N. Y.
Litho Chemical & Supply Co., 63 Park Row, New York, N. Y.
National Offset Supply Co., St. Louis, Mo.,
Pitman, Harold M., Co., 150 Bay St., Jersey City, N. J., and 51st Ave. and 33rd St., Chicago, Ill.

ADDRESSING AND MAILING SERVICES

Ardlee Service, Inc., 28 W. 23 St., New York, N. Y.
Gray, James Letter Shop, 215 E. 45th St., New York, N. Y.

AGSCO GRAINING GRIT (ALUMINUS OXIDE)

American Graded Sand Co., 2516-18 Greenview Ave., Chicago, Ill.

AGSCO SILICA GRAINING SAND

American Graded Sand Co., 2516-18 Greenview Ave., Chicago, Ill.

AIR CONDITIONING EQUIPMENT

Offen, B. & Co., 608 S. Dearborn St., Chicago, Ill.

ALUMINUM PLATES

(See Plates)

ALBUMEN

Fuchs & Lang Mfg. Co., Div. General Printing Ink Corp., 100 Sixth Ave., New York, N. Y.
Holland, Thor, 7048 Jones Ave., N. W., Seattle, Wash.
Hunt, Philip A., Company, 253 Russell St., Brooklyn, N. Y.—2432 Lakeside Ave., Cleveland, Ohio—1076 W. Division St., Chicago, Ill.
International Printing Ink Corporation, 75 Varick St., New York, N. Y.
Litho Chemical & Supply Co., 63 Park Row, New York, N. Y.
National Offset Supply Co., St. Louis, Mo.
Pitman, Harold M., Co., 150 Bay St., Jersey City, N. J., and 51st Ave. and 33rd St., Chicago, Ill.

ALIGNING PAPER

(See Vogeltypes Paper)

ARC LAMPS

(See Lamps—Arc)

ASPHALTUM

Fuchs & Lang Mfg. Co., Div. General Printing Ink Corp., 100 Sixth Ave., New York, N. Y.
Hilo Varnish Corporation, 42-60 Stewart Ave., Brooklyn, N. Y.
International Printing Ink Corporation, 75 Varick St., New York, N. Y.
Litho Chemical & Supply Co., 63 Park Row, New York, N. Y.
National Offset Supply Co., St. Louis, Mo.
Pitman, Harold M., Co., 150 Bay St., Jersey City, N. J., and 51st Ave. and 33rd St., Chicago, Ill.

ARTISTS

Hugo L. Sachs, 7 West 20th St., New York, N. Y.

ARTISTS' SQUARES

Zoltan, John M., 833 Lyman Ave., Oak Park, Ill.

ARTISTS' SUPPLIES

Peerless Blue Print Co., The, 347 Fifth Ave., New York, N. Y.

BELLOWS

United Camera Co., Inc., 1515 Belmont Ave., Chicago, Ill.

BENDAY AND SHADING MEDIUMS

(See Shading Mediums)

BINDINGS

Plastic—Brewer—Cantelmo Co., Inc., 118 E. 27th St., New York, N. Y.
Spiral—Spiral Binding Company, 148 Lafayette St., New York, N. Y.
Wire—O—Trussel Mfg. Co., Poughkeepsie, N. Y.
(See list of licensees in display advertisement)

BLANKETS

Bainbridge, Philip M. (Goodrich Rubber Blankets), 95 Madison Avenue, New York, N. Y.
Fuchs & Lang Mfg. Co., Div. General Printing Ink Corp., 100 Sixth Ave., New York, N. Y.
Ideal Roller & Mfg. Co., 2512 W. 24th St., Chicago, Ill.
International Printing Ink Corporation, 75 Varick St., New York, N. Y.
National Offset Supply Co., St. Louis, Mo.
Rapid Roller Co., Federal at 26th, Chicago, Ill.
Reed Roller & Supply Co., Inc., 415-417 Jackson St., San Francisco, Cal.
Roberts & Porter, Inc., 100 Lafayette St., New York, N. Y., and 402 S. Market St., Chicago, Ill.

LITHOGRAPHIC ABSTRACTS

Abstracts of important current articles, patents, and books, compiled by the Research Department of the Lithographic Technical Foundation, Inc. These abstracts represent statements made by the authors of articles abstracted, and do not express the opinions of the abstractors or of the Research Department. Information concerning the books or periodicals abstracted may be obtained directly by addressing the Department of Lithographic Research, University of Cincinnati, Cincinnati, Ohio.

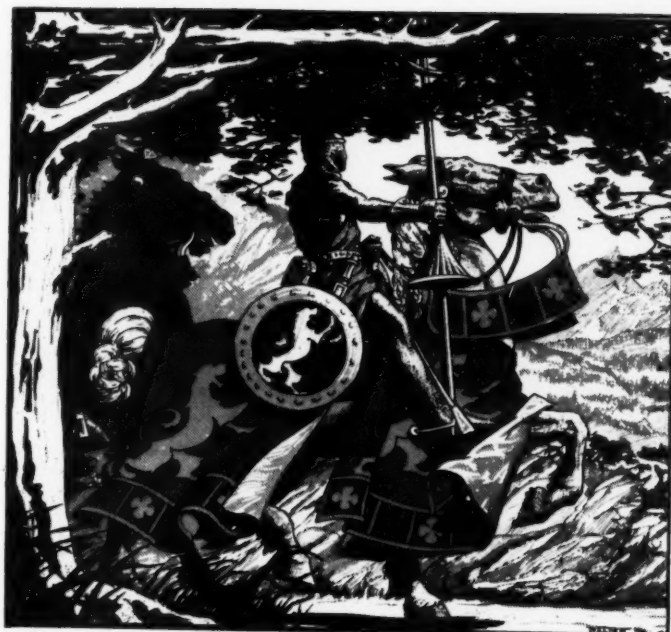
Photography and Color Correction

A Composing and Film-Printing Machine. *Inland Printer*, 98: 44, October, 1936. Lines of type are set on a machine, the "Orotype," resembling a linotype machine, developed by Max Ullmann, and built by a Swiss firm, and a cellophane transparency is made by printing with ink on both sides simultaneously by means of direct and rubber offset impressions. The transparencies are used for photolithographic or rotogravure purposes. (*Monthly Abstract Bulletin of Eastman Kodak Company*, 23, p. 19 (1937).)

Resume of Color Photography. A. Clair. *National Lithographer*, 44, No. 4, Apr., 1937, pp. 26, 28, 30, 75. The additive and subtractive processes of color photography are described briefly. Of the former, the author takes up the earlier Kinema Color process and the Finlay, Autochrome, Agfa, and Dufaycolor processes. Of the subtractive processes, the Tri-color Carbo, Eastman Wash-off Relief, Chromatone, Kodachrome, and Technicolor processes are discussed. In the making of color separation negatives, special attention is given to the choice of suitable films and filters, and to the lighting and exposure conditions necessary for good results.

Wet Collodion Dry Plates and Films. M. Leeden. *Modern Lithographer and Offset Printer*, 33, No. 3, Mar., 1937, pp. 41-2. In comparison with wet collodion, modern dry plates and films make possible a much higher output of negatives per day, require less illumination, and produce equally satisfactory results. Reasons for the greater economy of the new plates and films include the ease with which process films and plates can be laid down in exact position, and the fact that the sensitive layer is uniform clear to the edge.

Local Print Reduction. G. W. C. Taylor. *British Journal of Photography*, 83: 628, Oct. 2, 1936. A reducer capable of giving complete reduction on a bromide print with one sweep of a brush, in removing unwanted backgrounds, is made by dissolving iodine (1.3 gm.) in a con-



Original drawn on DOUBLETONE Drawing Paper

"SENSATIONAL"

is the verdict of all who have used this amazing new drawing board

Cuts in Half the Cost of Photo-Litho Illustrations

(The world's only Drawing Paper with two "invisible" tones)

DOUBLETONE

Enables the artist to draw an illustration in the usual way, and then develop the various tones with a stroke of the brush, getting unique Halftone and Ben Day effects at a fraction of the usual cost. The illustration shown above was drawn in outline on Craftint DOUBLETONE Paper and the screen effects were put right into the original by the artist. No additional work was required, the drawing being then ready to be photographed and plate made at line rates.

Compare this method with the cost of obtaining screen effects in the usual way and you will understand why this marvelous new invention is such a time-saver and money-saver in photo-lithographic plants.

SAMPLE KIT FREE!

Write us, on your letterhead, for a FREE Craftint Kit. Test out these samples of DOUBLETONE Drawing Paper and you will be convinced that DOUBLETONE has all the money-saving advantages we claim for it.

THE CRAFTINT MANUFACTURING CO.

210 St. Clair Ave., N.W., Cleveland, Ohio

Sinclair & Carroll Co., Inc., 591 Eleventh Ave., New York, N. Y.
Sinclair & Valentine Co., 11 St. Clair Pl., New York, N. Y.
Vulcan Proofing Co., 58th St. and First Ave., Brooklyn, N. Y.

BRONZERS

Henschel Mfg. Co., Milwaukee, Wis.

CAMERAS

Agfa-Ansco Corp., Binghamton, N. Y.
California Ink Co., Inc., The, 545 Sansome St., San Francisco, Cal.
Croke, Allan A., Co., 163 Oliver St., Boston, Mass.
Eastman Kodak Co., 343 State St., Rochester, N. Y.
Lanston Monotype Machine Co., 24th at Locust, Philadelphia, Pa.
Levy, Max & Co., Wayne & Berkley, Philadelphia, Pa.
Litho Equipment & Supply Co., Ogden Ave., Sheldon & Lake Sts., Chicago, Ill.
Miles Machinery Co., 18 East 16th St., New York, N. Y.
Norman-Willets Co., 318 W. Washington St., Chicago, Ill.
Ostrander-Seymour Co., The, 1870 S. 54th Ave., Cicero Station, Chicago, Ill.
Pitman, Harold M., Co., 150 Bay St., Jersey City, N. J., and 51st Ave. and 33rd St., Chicago, Ill.
Repro-Art Machinery Co., Wayne Ave. & Berkley St., Philadelphia, Pa.
Robertson, R. R., 1 N. Canal St., Chicago, Ill.
Rutherford Machinery Co., Div. General Printing Ink Corp., 100 Sixth Ave., New York, N. Y.
Sullebarger Co., E. T., 116 Nassau St., New York, N. Y., and 538 S. Clark St., Chicago, Ill.
Wesel Mfg. Co., 468 Fourth Ave., New York, N. Y., and Scranton, Pa.
Zeiss, Carl, Inc., 485 Fifth Ave., New York, N. Y.

CARBON (ARC LAMP)

Pease Co., C. F., The, 809 N. Franklin St., Chicago, Ill.

CARBON PAPER RIBBONS

Remington Rand, Buffalo, N. Y.

CARBONS—Photographic

Hunt, Philip A., Company, 253 Russell St., Brooklyn, N. Y.—2432 Lakeside Ave., Cleveland, Ohio—1076 W. Division St., Chicago, Ill.

CHEMICALS

Agfa-Ansco Corp., Binghamton, N. Y.
California Ink Co., Inc., The, 545 Sansome St., San Francisco, Calif.

Croke, Allan A., Co., 163 Oliver St., Boston, Mass.
Eastman Kodak Company, Rochester, N. Y.
Fuchs & Lang Mfg. Co., Div. General Printing Ink Corp., 100 Sixth Ave., New York, N. Y.
Hunt, Philip A., Company, 253 Russell St., Brooklyn, N. Y.—2432 Lakeside Ave., Cleveland, Ohio—1076 W. Division St., Chicago, Ill.
International Printing Ink Corporation, 75 Varick St., New York, N. Y.
La Motte Chemicals Products Co., 438 Light St., Baltimore, Md.
Litho Chemical & Supply Co., 63 Park Row, New York, N. Y.
Mallinckrodt Chemical Works, 3600 N. Second St., St. Louis, Mo.
Merck & Co., Inc., Rahway, N. J.
National Offset Supply Co., St. Louis, Mo.
Norman-Willets Co., 318 W. Washington St., Chicago, Ill.
Phillips & Jacobs, 622 Race St., Philadelphia, Pa.
Pitman, Harold M., Co., 150 Bay St., Jersey City, N. J., and 51st Ave. and 33rd St., Chicago, Ill.
Senefelder Company, Inc., The, 32-34 Greene St., New York, N. Y.
Siebold, Inc., J. H. & G. B., 47 Watts St., New York, N. Y.

CLOCKS—Interval Timers

Glogau & Co., 538 S. Clark St., Chicago, Ill.

COLOR CONTROL AND MEASURING EQUIPMENT

Huebner Laboratories, 202 E. 44th St., New York, N. Y.

COMPOSING MACHINES

Coxhead Corp., Ralph C., 17 Park Place, New York, N. Y.

COMPOSITION

Composing Room, The, 325 W. 37th St., New York, N. Y.
Grosby Press, Inc., 56 Gold St., New York, N. Y.
Monsen, Thorndod & Son, Inc., 730 N. Franklin St., Chicago, Ill.
New York Monotype Composition Co., 461 Eighth Ave., New York, N. Y.

CRAYONS-LITHO

Fuchs & Lang Mfg. Co., Div. General Printing Ink Corp., 100 Sixth Ave., New York, N. Y.
International Printing Ink Corporation, 75 Varick St., New York, N. Y.
Korn, Inc., Wm., 120 Center St., New York, N. Y.
Roberts & Porter, Inc., 100 Lafayette St., New York, N. Y., and 402 S. Market St., Chicago, Ill.

centrated solution of potassium cyanide (1 gm. in 4 c. c. of water). The reducer must be used fresh and discarded after about one hour, as soon as discoloration is observed: it may be applied by brush or ruling pen; it may be used mixed with blocking-out medium, such as Photopake, followed by rinsing, fixing, and washing. Care must be taken in the preparation and use of this solution because it is highly poisonous. (*Monthly Abstract Bulletin of Eastman Kodak Company*, 22, p. 528 (1936).)

Dot-Etching. R. F. Reed. *Photo-Lithographer*, 5, No. 3, Mar., 1937, pp. 49-51; *Lithographers' Journal*, 22, No. 1, Apr., 1937, pp. 22-3. Dot-etching is discussed from the technical standpoint, taking up the preparation of positives, the relative merits of camera and contact transparencies, and the advantages and disadvantages of the four reducers. Two things are important for the best results: (1) the half-tone dots should extend deep into the emulsion, and (2) the tone values should not require excessive correction. Any one of the reducers is satisfactory if used with understanding.

Densitometer: Its Application to Graphic Arts. Eastman Kodak Company. *Share Your Knowledge Review*, 18, No. 5, Mar., 1937, pp. 15-6. The principle of the Eastman transmission-reflection densitometer is explained and the role of the densitometer in photomechanical work is discussed with particular reference to the balancing of color-separation negatives and the determining of printing exposures from negatives. In both of these a great saving of time and effort can be realized by use of the densitometer.

Dufaycolor in Photomechanics. J. S. Mertle. *Graphic Arts Monthly*, 9, No. 4, Apr., 1937, pp. 42, 44-5. The basic principles of the Dufaycolor process are explained briefly and the application of this method to the photomechanical processes is discussed. One of its chief advantages is the fact that a color print is obtained quickly and direct from the subject.

Kodachrome Process. T. L. J. Bentley. *Penrose Annual*, 39, (1937), pp. 101-5. The author discusses the Kodachrome process, using colored diagrams to illustrate the steps involved, both in manufacturing the sensitive film and in processing the exposed film. The finished image is free from mosaic or screen pattern, the resolution of detail is superior to black-and-white results, and the highlights consist of clear film, so that the brilliance equals that of black-and-white film.

Arrival of Color Photography. D. A. Spencer. *Penrose Annual*, 39, (1937), pp. 104-7. The difficulties involved in making Vivex (partially) Linked Half-tone are compared with those in the case of the Vivex-Linked-Gravure system.

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Planographic Printing Surfaces and Plate Preparation

Deep-Etch Photo-Litho Plates from Negatives.

H. M. Cartwright. *Process Engravers' Monthly*, 44, No. 519, Mar., 1937, pp. 85-6. The advantages of deep-etched plates are (1) screen positives which have been color-corrected by dot-etching are used in their preparation, (2) more durable images result, (3) sharp, well-defined images with no tendency to spread at the edges are obtained, (4) somewhat richer impressions are possible (because a little more ink can be carried), and (5) defects are recognized when the plate is first rolled up. The process of Morland and Impey, Ltd., and A. G. Rendall (*British Patent No. 449,772*) is described. This provides a convenient method for preparing plates from line or screen negatives, being an alternative method to the usual albumin process with the added advantages of deep-etch.

Making An Albumin Plate. L. R. Meloy. *Photo-Lithographer*, 5, No. 3, Mar., 1937, pp. 20-5. The author describes in detail the preparation of the bichromated albumin solution, and the coating, exposure, development, etching, washing, and rolling-up of the plate. Emphasis is placed on the necessity for cleanliness throughout the process, and the use of a five-minute wash under running water after etching the plate and before rolling up.

Scraper Corrections on Zinc. Translated by A. H. Reiser from *Der Klimsche Druckerei-Anzeiger. Lithographers' Journal*, 22, No. 1, Apr., 1937, p. 25. The proper use of the scraper needle in making corrections on the zinc plate is described. The unwanted sections must be scraped clean down to ungreased metal, with a round-pointed needle, and the scrapings remove from the plate. The scraped area may seem to be free of grease when only the surface has been removed. The finished scraped areas should present no sharp-edged pits or ridges.

Equipment and Materials

Graining Machine. C. Zarkin. *U. S. Patent No. 2,074,633* (Mar. 23, 1937). In a plate graining machine, the combination of a base, a graining tub directly supported on said base, a motor in the base for imparting graining movements to said tub and means for tilting the base and the motor mounted therein without changing the supported relation of the graining tub on the base.

Paper and Ink

The Cause and Cure of Grainy Edges, Curl, and Cockles in Paper. E. W. G. Cooper. *Paper Trade Journal*, 104, No. 11, Mar. 18, 1937, pp. 161-7 TS. The common characteristics of the various paper-making fibers are given briefly. The preparation of pulp and the manufacture of paper are discussed with special reference to the causes of grainy edges, curl, and cockles. Procedures are suggested for the investigation of these troubles, and for their elimination.

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Instrumentation Studies. VIII. An Analysis of Smoothness. Institute of Paper Chemistry. *Paper Trade Journal*, 104, No. 11, Mar. 11, 1937, pp. 157-60 TS. The difficulties encountered in measuring paper smoothness and the obstacles to the use of the various testing devices are surveyed. The typical surface defects of both uncoated and coated papers, their causes, and their effects on printing quality are discussed.

Instrumentation Studies. X. Methods for Measuring Smoothness of Paper with Special Reference to A New Electrical Capacitance Method. Institute of Paper Chemistry. *Paper Trade Journal*, 104, No. 13, Apr. 1, 1937, pp. 188-91 TS. Six types of method for measuring the smoothness of a free surface, and two for measuring the smoothness of a compressed surface are discussed.

Transfer Paper. Anonymous. *New Products Digest*, 3, No. 7, Apr. 1, 1937, Item No. 346. A new transfer paper manufactured by Leipziger Wellpapier-Fabrik Moll & Söhne, Lucka, District Altenburg, Germany, combines the advantages of fine grain, softness, strength and toughness, ease of removal from zinc or stone, little tendency to roll up, and good keeping qualities.

Some Comments on Printing Ink Driers. C. A. Knauss. *American Ink Maker*, 15, No. 4, Apr., 1937, pp. 16-8, 39. The part played by driers in the drying of inks is not yet completely understood. The three types of driers in use are (1) stearates and resinates, (2) linoleates, and (3) naphthenates. Of these, the naphthenates are the best driers because they are more soluble in drying oils, producing uniform and efficient drying action. The metal in the drier must be present in available form. The use of too much drier retards drying. It is well to avoid the use of aluminum hydrate in inks because the phosphate impurities usually contained in this substance poison the drier when the latter is added. Reference is also made to zinc naphthenate, which produces wetting and dispersion of pigments, and to aluminum naphthenate, a bodying agent which does not interfere with gloss, flow, or drying.

Method of Making Pigmented Protective Coatings. J. Crouet. *U. S. Patent* No. 2,077,167 (Apr. 13, 1937). The process for treating a pigment for rendering it completely deflocculated when incorporated in a vehicle, which comprises determining the particle size and specific gravity of a selected quantity of a commercial pigment, determining from this particle size and specific gravity the amount of a substantially water-insoluble fatty acid compound of the class consisting of the fatty acids of glyceride oils and fats and the glycerol esters thereof required to produce a coating of true mono-molecular thickness on every pigment particle in the selected quantity of the pigment, dissolving the said quantity of fatty acid compound in an organic solvent which is freely miscible with the chosen vehicle in which the pigment is to be

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Safety Devices in the Ink Plant. I and II. Anonymous. *American Ink Maker*, 15, No. 3, Mar., 1937, pp. 16-9, 35; No. 4, Apr., 1937, pp. 21-3, 27. Safety devices for use in printing ink plants are described. In the ink mill, bar-types of device cannot be used when the mill is being cleaned, but a safety guard with a screen bottom which protects the operator is described. Quick-stopping devices protect the mill as well as the operator. Gear guards, non-slip flooring, and safety education are recommended. Ink mixers require enclosures for the gears and other safety devices, including quick-stopping arrangements. Portable drum elevators and tilters prevent a large number of accidents. Dust collection results in increased profits as well as better health and increased production, and the importance of fire prevention and control cannot be over-emphasized.

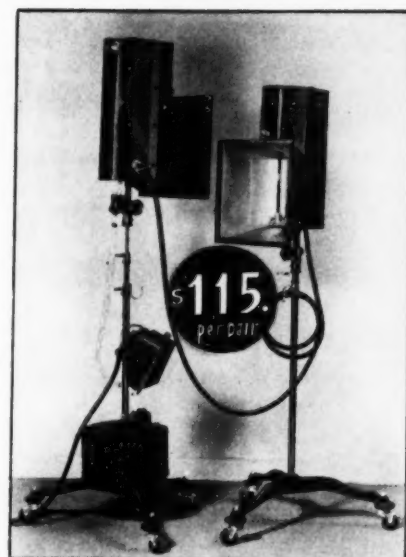
Printing Inks Cannot Remain Permanent for an Indefinite Period. Anonymous. *Modern Lithographer and Offset Printer*, 32, No. 9, Sept., 1936, p. 216. Inks are affected by factors other than light; e. g. certain inks fade from the action of ozone, sulfur oxides, or salt spray. Furthermore, there is no such thing as a permanent ink in the sense that indefinite exposure will not change it. When inks are reduced in strength, even relatively permanent inks become more susceptible to change.

Aluminum Paint and Powder (2d Ed.) Book. J. D. Edwards. Published by *Reinhold Publishing Corp.*, 330 West 42d Street, New York, New York; 2d ed., \$4.50, 216 pp. This new edition contains considerable new material and is more than double the length of the first edition. The book takes up the manufacture and properties of the powder, with rules and precautions for its handling; the vehicles suitable; the application and properties of aluminum paint on metal and wood surfaces; and the use of the powder in printing ink, metallized paper, and other materials. The book has an appendix taking up specifications for vehicles, a subject and author index, and at the end of each chapter a bibliographical reference list. Many photographs are included.

General

Cleanliness in Lithography. J. M. Williams. *Lithographers' Journal*, 22, No. 1, Apr., 1937, pp. 24, 44-5. The necessity for cleanliness in lithography is emphasized. Difficulties introduced by the use of impure water and methods of water purification are discussed.

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Cramer Dry Plate Co., G., Lemp & Shenandoah Ave., St. Louis, Mo.
Eastman Kodak Company, Rochester, N. Y.
Gevaert Co. of America, Inc., The, 423 W. 55th St., New York, N. Y.
Haloid Co., The, 6 Haloid St., Rochester, N. Y.
Hammer Dry Plate Co., Ohio Ave. & Miami St., St. Louis, Mo.
Norman-Willets Co., 318 W. Washington St., Chicago, Ill.
Polygraphic Company of America, Inc., 310 E. 45th St., New York, N. Y.

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Okie, Francis G., 247 S. Third St., Phila., Pa.

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American Writing Paper Co., Holyoke, Mass.
Beckett Paper Co., The, Hamilton, Ohio
Brown Company, Portland, Maine
Burgess Cellulose Co. (Div. of C. F. Burgess Laboratories, Freeport, Ill.)
Cantine Co., Martin, Saugerties, N. Y.
Case & Risley Press Paper Co., Oneco, Conn.
Champion Paper & Fibre Co., Hamilton, Ohio
Chemical Paper Mfg. Co., Holyoke, Mass.
Chillicothe Paper Co., The, Chillicothe, Ohio
Consolidated Water Power & Paper Co., Wisconsin Rapids, Wis.
Crocker-McElwain Co., Holyoke, Mass.
Dill & Collins, Inc., Richmond & Tioga Sts., Philadelphia, Pa.
Eastern Mfg. Co., 500 Fifth Ave., New York, N. Y.
Falulah Paper Co., Fitchburg, Mass.
Fraser Industries, Inc., 424 Madison Ave., New York, N. Y.
Hamilton, W. C. & Sons, Inc., Miquon, Pa.
Hammermill Paper Co., Erie, Pa.
Hollingsworth & Whitney Co., 140 Federal St., Boston, Mass.
Howard Paper Co., Urbana, Ohio
International Paper Co., 220 E. 42nd St., New York City, N. Y.
Kimberly-Clark Corp., Neenah, Wis.
Maxwell Paper Co., Franklin, Warren County, Ohio
Munising Paper Co., Munising, Mich.
Neenah Paper Co., Neenah, Wis.
Rhineland Paper Co., Rhineland, Wis.
Riegel Paper Co., 342 Madison Ave., New York, City, N. Y.
Strathmore Paper Co., W. Springfield, Mass.
Warren, S. D. Co., 89 Broad St., Boston, Mass.
Watervliet Paper Co., Watervliet, Mich.
West Virginia Pulp & Paper Co., 230 Park Ave., New York City, N. Y.
Whiting Geo. A. Paper Co., Menasha, Wis.

Miscellaneous

Photo-Gelatine Printing. III and IV. F. Pfund (Translated by J. D. Carliph-Ebert, from *Der Deutsche Buchund Stein-Drucker*). *Lithographers' Journal*, 21, No. 12, Mar., 1937, pp. 474, 491; 22, No. 1, Apr., 1937, pp. 26, 43. The third installment discusses the production of the base layer, giving formulas for its preparation, the method of application to the plate, and directions for printing of the plates. Changes in temperature and humidity cause difficulties, and high humidity is particularly dangerous in this process. The final installment takes up printing by hand and by power presses, and describes the dampening and printing processes. Skill and suitable inks are required for good results. The photo-gelatine process combines well with lithography, since lithographic color-plates on stone can be made from the gelatine plates.

The Coating Machine (In Metal Decorating). W. N. Misuraca. *National Lithographer*, 44, No. 4, Apr., 1937, pp. 34, 36. The coating operation in metal decorating is discussed, stressing its importance as a protective and a decorative measure, and giving a brief description of the coating machine, with directions for its care and operation. Special attention is devoted to the distributing, coating, and scraper rolls, and their adjustment. It is recommended that a special roller be added, to keep the scraper roller moistened with the coating solution to prevent scum.

Collotype Process. M. de Sperati and J. Filippi. U. S. Patent No. 2,075,707 (Mar. 30, 1937). A process for producing a printing plate for use in a collotype process which comprises applying a layer of colloidal substances capable of absorbing and retaining moisture to a suitable plate, then granulating the layer, then applying over the granulated layer a layer of light-sensitive gelatine emulsion, then exposing the plate to the action of light passing through the desired negative and an interposed refraction screen, the exposed plate than being developed, washed and dried and treated with known solutions to form a printing plate as in a collotype process.

Aniline Printing. R. M. Bates. *Paper Trade Journal*, 104, No. 13, Apr. 1, 1937, pp. 192-5 TS. The use of aniline printing will probably always be restricted in the graphic arts trades because of certain fundamental characteristics such as liquidity and volatility of its ink. These same characteristics, however, give it many qualities which suit some purposes so admirably that the student of printing cannot afford to overlook this type of reproduction.

Duke of Gloucester Opens Printing's New Research Center. Anonymous. *Modern Lithographer and Offset Printer*, 33, No. 3, Mar., 1937, pp. 48, 50. A description of the laboratory, equipment, and working policy of Printing and Allied Trades Research Association.

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Zarkin Machine Co., Inc., 335 E. 27th St., New York, N. Y.

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New England Quartz Company of New York, 150 Nassau St., New York, N. Y.
Seibold, Inc., J. H. and G. B., 47 Watts St., New York, N. Y.

Zarkin Machine Co., Inc., 335 E. 27th St., New York, N. Y.

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Miles Machinery Co., 18 E. 16th St., New York, N. Y.
Rutherford Machinery Co., Div. General Printing Ink Corp., 100 Sixth Ave., New York, N. Y.
Wesel Mfg. Co., 468 Fourth Ave., New York, N. Y., and Scranton, Pa.

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Stockinger & Langbein Photo Litho Corp., 30 E. 21st St., New York, N. Y.
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Stevenson Photo Color Separation Co., 222 W. Fourth St., Cincinnati, Ohio

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International Printing Ink Corporation, 75 Varick St., New York, N. Y.
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WHAT WILL IT COST?

SELLING photo-lithography is not an easy task, as everyone who has attempted it will agree. And the question the prospective buyer is most likely to ask, and which is most difficult to answer, is, "What will it cost?" If the job is at all complicated, and most jobs are, the salesman cannot give an immediate reply. Even if he knows every detail of the manufacturing cost of what he has to sell, and he should have this knowledge, it is not always practical to make an estimate while sitting by the buyer's desk. Instead, estimating should always be done in the plant, preferably by a person who does nothing else. Such a person, familiar with varying conditions in the plant, and who has at hand information as to the changing prices of paper and other items, will be more likely to make a correct estimate than a salesman who has not at hand all the necessary data.

There is a certain amount of time required for every operation in the production of a job, and the correct time is what will be required in the average plant under average operating conditions. In other words, there is theoretical time in which each operation can be performed, if all conditions are favorable, and they seldom are; and there is the average time. Any plant that has kept accurate records over a considerable period will agree that while an operation should be performed within a given time, and instances will be found when less time was required; nevertheless the average time, for six months or one year, will be considerably higher.

Of course, it is the duty of the executive to make sure the conditions under which the work is produced are correct. He should go farther, and by comparison and co-operation with other lithographers, find out how the average time for each operation in his plant compares with identical operations in other plants. It is this average time, not only in your plant, but in the plants of your competitors, which you should use as a basis for estimating. You should not reduce this average when estimating on jobs that seem easy to produce. You should, however, feel justified in increasing the average when it is apparent that difficulties will be encountered.

For example, let us assume your records for the past year for a 34 x 44" press show an average of 2,500 impressions per hour for a certain kind of work and using a certain kind of paper. This average is also about the same as the average production of your competitors. Since this average is so correct, you may feel it is safe to use it when printing on a lighter weight of paper, or a paper that for some other reason may present difficulties. It may so happen conditions are just right, and with this paper the pressman is able to maintain the average. While you realize that, theoretically this paper

(Continued on page 77)

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(Continued from page 75)

cannot be printed as fast as the regular paper, nevertheless the pressman has maintained the average. You use this average on a second job on the same paper, but a much longer run. This time conditions are not ideal, and everything seems to go wrong with the job. The average impression per hour drops to an alarming figure, and you take a heavy loss. You cannot go to the customer and ask that he pay more because you have already charged him what you thought was a fair price on the previous job, identical paper being used on both jobs.

From the foregoing it must be obvious that you cannot apply the average time of production for one class of work to another kind of work that is likely to cause trouble somewhere along the line.

Press-room averages are here mentioned, but similar difficulties are likely to be encountered in the camera room, or with other operations between there and the press-room.

The only true and honest way to establish a fair price for lithography is by averaging the cost of every operation. This is the method followed by large corporations. For example, consider what you pay for paper. The paper manufacturer charges you the same rate per pound for identical paper whether made when every condition in his plant was ideal, or when he was having all kinds of trouble and the paper-making machine was producing more spoilage than usable paper. And any paper-mill superintendent with long experience will agree that now and then such conditions exist.

Therefore, if you attempt to base your price on ideal conditions in your plant you are sure to run into trouble. Instead, when estimating, you should use as your basis the average of many plants. No one has a monopoly of the knowledge required to produce satisfactory photo-lithography work, nor does any plant operate much more efficiently than do others. Furthermore, in groups of workers in photo-lithographic plants one group is not likely to be more efficient to any marked degree than the average.

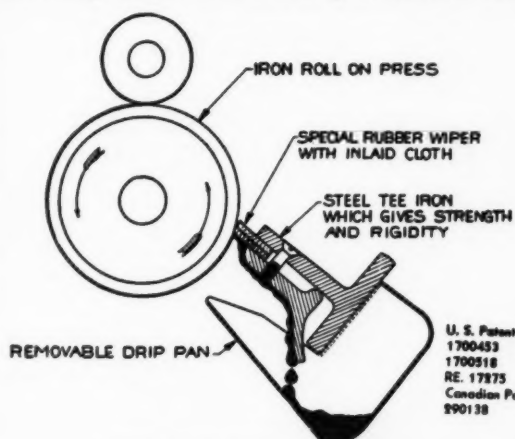
Of course, it is obvious that in those plants when the latest and best machinery and equipment is installed, a better quality of work at less cost should, theoretically, be produced. On the other hand, it should be kept in mind that with a plant thus equipped, there is a much heavier investment charge, and a greater depreciation charge. Therefore, such a plant makes a mistake if it quotes a lower price than the average, thereby giving to the customer a percentage of the gross profit that belongs to the capital investment and depreciation charges.

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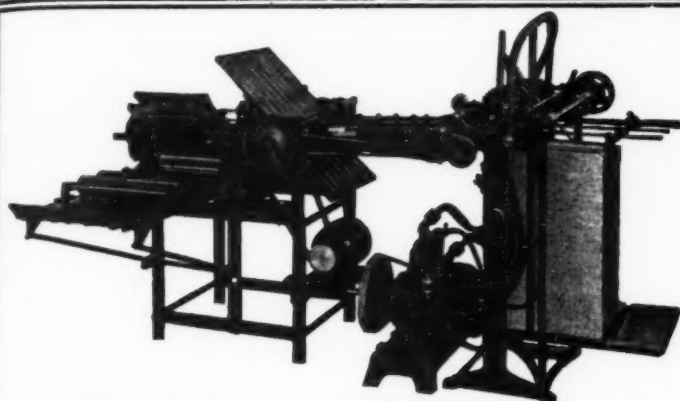
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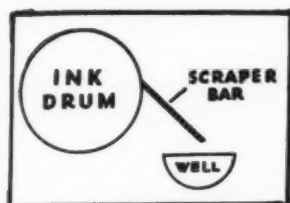
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Abstracts of important current articles, patents, and books, compiled by the Research Department of the Lithographic Technical Foundation, Inc. These abstracts represent statements made by the authors of articles abstracted, and do not express the opinions of the abstractors or of the Research Department. Information concerning the books or periodicals abstracted may be obtained directly by addressing the Department of Lithographic Research, University of Cincinnati, Cincinnati, Ohio.

Photography and Color Correction

Photography by Polarized Light. M. Leeden. *Modern Lithographer and Offset Printer*, 33, No. 1, Jan., 1937, pp. 1-2. The nature of polarized light is explained briefly and the uses of polarized light in photography are described, with reference to the photographing of matt or rough materials, glossy surfaces, objects under water, and other difficult subjects.

Improvements in Photomechanical Processes in France. L. P. Clerc. *The Penrose Annual*, 39, pp. 112-4 (1937). (1) A simple automatic focussing device suitable for overhead process cameras, devised by A. Bonnetaine, is illustrated and described briefly. (2) Chassang has found that, in collodion for wet plate work containing 5 grams ammonium iodide and 5 grams cadmium iodide per liter, the addition of 1 gram calcium chloride per liter increases the speed more and gives greater contrast than the same weight of ammonium or cadmium bromide. Substitution of 1 part sulfuric acid for each 25 parts of acetic acid in the usual ferrous sulfate wet collodion developer, increases contrast, decreases exposure, and increases life of the developer. (3) L. Amy has found it possible to separate photographically any number of colors, even those as slightly different as writings made with different black inks, by using monochromatic illumination. An illustration is included. (4) A special apparatus designed by Bouzard-Calmels to facilitate automatic correction of color separation negatives is illustrated and described.

Highlight Halftone Work with the Sterling Groesbeck Diaphragm. H. A. Groesbeck. *The Penrose Annual*, 39, pp. 129-30 (1937). The Sterling Groesbeck diaphragm is a precision instrument permitting the accurate decentering of the diaphragm to the proper degree for blocking out the highlights. The light passes through the screen openings at a new angle, and the operator can use large or small apertures with short or long exposures. Two small dots can be introduced under each single-screen opening, to produce a double-screen effect, or other variations may be produced.

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Moire Pattern in Halftone: Methods of Elimination. F. H. Smith. *Paper and Print*, 9, No. 36, Winter, 1936, pp. 354, 356, 358. In copying halftones, moiré pattern is minimized by: (1) copying as a line job; (2) turning the copy to give a new screen angle; (3) throwing the copy out of focus; (4) slightly jolting the camera during exposure; (5) using "matt" glass over the copy; (6) using an irregular screen. Method 5 is recommended by the London County Council School of Photo-Engraving. Diffusion by the matt surface is controlled by applying a thin coat of white vaseline as required. The copy may be partially retouched to cover up the dots. Illustrations are included.

A New Screen: W. Heidenhain. Anonymous. *Paper and Print*, 9, No. 36, Winter, 1936, p. 380. A new screen manufactured by W. Heidenhain, of Berlin, is described in a brief note. This screen is made by etching through an extremely thin opaque coating on glass, without etching into the glass. The lines are claimed to be sharper and far more accurate, production cost is less, and special cements superior to Canada balsam may be used. All present rulings, and apertures departing from the usual squares, are possible.

Planographic Printing Surfaces and Plate Preparation

Projection: Its Origin and Progress Up to the Present Time. F. O. Sullivan. *National Lithographer*, 44, No. 2, Feb., 1937, pp. 16-17, 52. The history and present status of the process of printing lithographic plates by projection are summarized, and the equipment available is described. The advantage of the projection process is the economy resulting from the use of small negatives, and from time saved in getting the plates ready for the press.

Printing Plates. W. B. Wescott. *British Patent*, No. 454,283 (1936). In the preparation of sheet aluminum or an alloy thereof with manganese, for use as planographic printing plates, the aluminum, etc., is immersed in a hot solution of an alkali aluminate to free it from grease, and to provide it with minute pits, which are coated with a microporous crystalline oxide having a trace of alkali whereby the plate is sensitized to fatty acids.

Lithographic Engraving and the Litho Ruling Machine. A. H. Reiser. *Printing Equipment Engineer*, 53, No. 3, Dec., 1936, pp. 13-4. The technique of lithographic engraving on stone is discussed and the use of the litho-ruling machine is described.

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Equipment and Materials

Orotype Composing Machine. Anonymous. *Printing Equipment Engineer*, 53, No. 4, Jan., 1937, pp. 15, 24-5. A new type-composing machine for offset and gravure has been developed by the Swiss Locomotive and Machine Works in collaboration with Dr. Max Ullman, and is called the Orotype. The machine resembles a Linotype machine, but instead of a casting device, means are provided for printing on both sides at once of a cellophane sheet. An impression is pulled on a rubber blanket, the type is re-inked, the cellophane sheet is then inserted between the two, and the impression made. Bow-spring spacers permit justification by simply compressing the line to the necessary length. Corrections are easily made by removing the ink impressions with benzine and (1) printing in the new material, or (2) attaching a properly printed strip of cellophane.

Planographic Printing Machine. L. A. Morse. *U. S. Patent* No. 2,065,535 (Dec. 29, 1936). In a planographic printing machine, the combination of a trough to contain liquid, a fountain roll having a roughened metallic surface coating with the liquid in said trough, a bodily shiftable ductor roll having a comparatively thick liquid absorbent and storage covering arranged to intermittently coat with said fountain roll, a roll to receive liquid from said ductor roll, said last-named roll having a comparatively thin fabric covering, and means to transfer moisture from said last-named roll to a printing plate.

The Schlesinger Inking System. N. Montague. *The Penrose Annual*, 39, pp. 153-5 (1937). The Schlesinger inking system comprises two pairs of breaking-up rollers placed between the inking vibrator and the main distributing rollers. Stiff inks, as they come from the can, may be used successfully on an offset press fitted with this system. Advantages are: ink reducers are unnecessary; tone values in halftone printing are improved; number of printings may be decreased; operation is easier and scum is avoided; finer screens may be printed at high speeds without filling in. An example of three-color offset work printed with this system accompanies the article.

Paper and Ink

Measuring the Uniformity of Printed and Other Surfaces. J. Bekk. *Zellstoff und Papier*, 16, pp. 281-3, (1936). The paper sample is completely covered with ink or color by a uniformly inked press plate. It is then placed on a small rotating table whose rotational axis is in line with the elongation of the optical axis of a camera. During rotation of the sample the number of points with optical-photographic reaction, whose summation is recorded on the photographic plate, increases with its distance from the center. This results in a concentric

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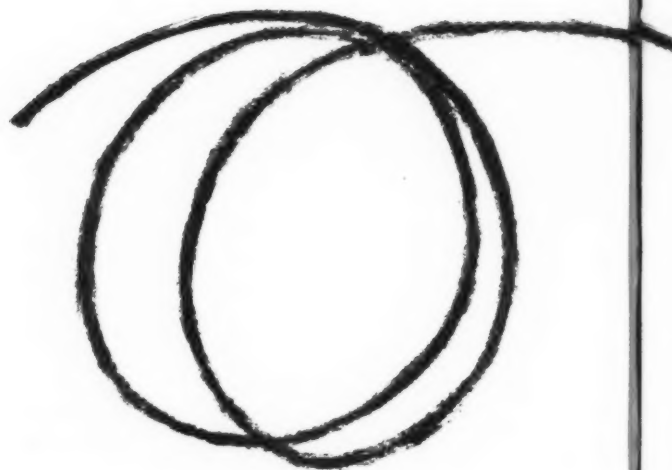
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structure on the photograph, due to the nonuniformity of the paper surface, in which the markings or rings are sharpest near the middle, fading toward the periphery to a homogeneous black surface. The distance of the recognizable circular structure from the center serves as a measure of the nonuniformity of the surface examined. Six photographs. (*Chemical Abstracts*, 30: 6562 (1936)).

Instrumentation Studies. V. Report on Gloss. (Staff of The Institute of Paper Chemistry). *Paper Trade Journal*, 104, No. 1, Jan. 7, 1937, pp. 6-9 TS. Gloss measurement data are given which lead to the conclusion that a fixed angle instrument using an angle between 10 and 25 degrees is to be preferred.

Electricity in Printing Paper. J. Bekk. *Papierfabrikant*, 33, No. 32, Aug. 11, 1935, pp. 265-9. Forces due to electrification of paper can be very troublesome on the various printing operations. While methods are known for nullifying the charge in paper, there is little specific knowledge on the origin of static electricity in paper. Paper is not only charged by friction or rubbing, but by varying pressure, extension, separation of surfaces, and escape of water vapor. Electrification may be produced at many places in the paper machine. The charge developed in rolls cannot be removed by any known method of discharging, and is possibly due to increasing pressure on inner layers during the winding of the roll. A roll may become charged in dry storage due to the increasing pressure on the inner layers resulting from contraction of the outer layers. Some charge may be developed by surface rubbing and vibration during transportation. Printing operations, like paper making operations, will account for the development of large charges. Paper may be discharged by the following methods: The common method of regulating water content, and use of hygroscopic salts in the paper are discussed; the use of earthed wires, chains, etc. is mentioned and the author points out that contacting conductors do not remove the charge completely; air surrounding the paper may be rendered conducting by ionizing it by such ionizing rays as those from radioactive substances, or by ionizing with flames, or by placing a set of earthed metal points near the paper; the charge may be neutralized by passing the paper through a high frequency brush discharge formed between two opposing sets of points between which the paper travels, if the paper is positively charged, it attracts the negative ions from the discharge region until the charge is neutralized, or, if negatively charged, positive ions are attracted. This method appears to be the most efficacious. (*Paper Trade Journal*, 103, No. 26, Dec. 24, 1936, p. 380 T.S.)

Drying of Printing Inks. R. Beuerlei. *Farben-Chemiker*, 7, pp. 246-50 (July, 1936). The drying characteristics of linseed oil, tung oil, and various linseed stand oils are discussed in considerable detail, giving explanations where possible, of the peculiar drying properties of

these oils. Light plays a definite part in drying of films containing these oils, and drying tests should be made under the conditions to which the freshly printed paper will be exposed, i. e., darkness and partial exclusion of air. Of various types of light ultra-violet light has the greatest effect on drying speed. Air circulation was found to have less effect than had been supposed, but humidity is a powerful inhibitor of drying.

Paint Room Materials and Supplies. W. N. Misuraca. *National Lithographer*, 44, No. 2, Feb., 1937, pp. 24, 26, 48. The standard pigments suitable for tin printing are classified according to color, and discussed on the basis of chemical activity, adherence, hiding power, oil absorption, color, fading, and baking. Tests for the last five properties are described.

Some Physical Aspects of Ink Manipulation. R. F. Bowles. *The Penrose Annual*, 39, pp. 165-9 (1937). For every job spoiled by the use of the wrong ink reducer, there must be ten jobs spoiled by the use of the wrong quantity of the right reducer. Reasons for reduction of inks, and properties of common reducers are discussed. Curves show the effects of reduction on viscosity. The choice of a reducer must result from a knowledge of its influence on all the factors involved.

Pigment Dispersion. C. K. Sloan. *American Ink Maker*, 15, No. 2, Feb., 1937, pp. 16-9. Pigment dispersion and particle arrangement greatly affect the properties of coating compositions such as paint and printing inks. Ink mixing, flow, consistency, sedimentation, gloss, mottling, and color are discussed from the standpoint of dispersion and particle arrangement.

General

Preparation of Originals for Use on Multicolor Presses. W. N. Misuraca. *National Lithographer*, 44, No. 1, Jan. 1937, pp. 30, 32. Correct operation of the two-color press for metal printing makes possible the use of any ink made for metal lithography with good results, and eliminates troubles usually blamed on the ink, such as transfer of traces of the design from one plate to another, the accumulation of scum on the blanket, and the discoloration of one plate by another. The proper methods of preparing plates, designs, and engravings are discussed briefly, and a description is given of a simple and practical method of preparing an engraving so that the two or more colors are independent of each other.

Printing with Excessive Moisture . . . Keeping Varnish on Paper Surface. C. F. Geese. *National Lithographer*, 44, No. 1, Jan., 1937, p. 52. Flatness in appearance of offset printing is attributed to excessive moisture, and to improper mixing of ink with reference to the paper used. Kerosene, machine oil, paraffin oil, and the like cause the ink vehicle to penetrate too much.

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OFFSET PRESSMAN — Must be high grade experienced man on Webendorfer and Miehle single-color presses, permanent position, day work. S. G. Vrooman, 38 No. Ontario St., Toledo, Ohio.

SITUATIONS WANTED

SUPERINTENDENT, A PRACTICAL LITHOGRAPHER, 30 Years Experience in High Grade Commercial and Color Work, Knows all Departments, Art, Camera, Platemaking and Press. Versed in Modern Methods of Reproduction, Dot Etch, Deep Etch, Dry Print, an Excellent Executive, Good Education and Personality, Seeks Connection with Progressive Concern Requiring a Man of Unusual Ability. Box M-5.

LITHOGRAPHIC EXECUTIVE, thoroughly qualified on all phases of reproduction, can perform every operation in a litho plant from camera and platemaking to edition off the press. Technical knowledge and engineering training. Will consider straight salary or salary and interest. Box M-12.

TECHNICAL COUNSEL to a company desiring unbiased knowledge that the counsel can prove by actual application. Technically trained in camera and platemaking. Now in full charge of plant operations. Compilation of comprehensive survey and installation of equipment. Permanent connection with medium sized plant desired. Box M-9.

PRESSMAN, fully experienced halftone, color black and white. Capable taking charge pressroom. Now living in the South. Box M-10.

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